



Water Quality Advisory Group
Report

October 9, 2002

by:

Water Quality Advisory Group
John Fekete, Chair

TABLE OF CONTENTS

EXECUTIVE SUMMARY OF THE FINDINGS OF THE WATER QUALITY ADVISORY GROUP	iv
I. INTRODUCTION	iv
II. FIVE POLICY AREAS	iv
A. The Impact of Wet Weather Events on Municipal Wastewater Treatment Facilities	iv
B. Special Designation of Water Bodies Policy	iv
C. Antidegradation Policy for Water Bodies Outside the Great Lakes Basin	v
1. Estimation of Background Concentration of Specific Parameters in Receiving Waters	vi
2. Significant Lowering of Water Quality/De Minimis	vii
3. Can the Discharge Impact be Reduced?	viii
4. Accommodates Important Economic or Social Development in the Area	ix
D. Biological Integrity Water Quality Criteria Policy	x
E. Sediment Water Quality Criteria Policy	xi
FINDINGS OF THE WATER QUALITY ADVISORY GROUP	1
I. INTRODUCTION	1
A. Purpose and Function of the Water Quality Advisory Group	1
B. Explanation of Findings/Report	1
II. THE IMPACT OF WET WEATHER EVENTS ON MUNICIPAL WASTEWATER TREATMENT FACILITIES	2
A. Issue	2
B. Discussion	2
C. Conclusion	2
III. SPECIAL DESIGNATIONS OF WATER BODIES POLICY	2
A. Issue	2
B. Discussion	2
C. Conclusion	3
IV. ANTIDEGRADATION POLICY FOR WATERS OUTSIDE THE GREAT LAKES BASIN	3
A. Introduction to Antidegradation	3
1. Issue	3
2. Discussion	4
B. Estimation of the Ambient Concentration of Specific Parameters in Receiving Waters at Critical Flow	9
1. Issue	9
2. Discussion	9
3. Conclusion	10
C. Significant Lowering of Water Quality/De Minimis	10
1. Issue Summary	10
2. Discussion of Significant Lowering of Water Quality/De Minimis Policy Options	10
3. Conclusion	22
D. Actions that Do Not Constitute Significant Lowering	24
E. When is a proposed Significant Lowering of Water Quality Necessary From a Technical Perspective?	31
1. Issue	31
2. Discussion of the Policy to Define When a Discharge is Necessary for Purposes of Antidegradation	31
3. Conclusion	33
F. Economic/Social Development Test - When does a Significant Lowering of Water Quality Accommodate Important Economic or Social Development in the Area	34
1. Issue	34
2. Discussion	35
3. Conclusions	44
V. BIOLOGICAL INTEGRITY WATER QUALITY CRITERIA POLICY	47
A. Issue	47
B. Discussion	47
C. Conclusion	48
VI. SEDIMENT WATER QUALITY CRITERIA POLICY	49
A. Issue	49
B. Discussion	49
C. Conclusion	51

APPENDIX

A. WATER QUALITY ADVISORY GROUP MEMBER LIST	52
B. RECOMMENDATIONS FROM THE TECHNICAL SUBCOMMITTEE TO THE WATER QUALITY ADVISORY GROUP FOR DETERMINING AMBIENT CONCENTRATIONS OF POLLUTANTS (June 5, 2002).....	54
C. GOALS AND POLICIES OF THE CLEAN WATER ACT	61
D. INDIANA'S EXISTING ANTIDEGRADATION STANDARDS IN REGULATION	63
E. A CORE DISPUTE ON TWO PRINCIPLES FOR ANTIDEGRADATION POLICY DECISION.....	68
F. WQAG SUPPLEMENTARY DOCUMENTS - TABLE OF CONTENTS	71
G. WQAG HISTORICAL DOCUMENTS - THE LIST	74

Executive Summary of the Findings of the Water Quality Advisory Group

I. Introduction

The Water Quality Advisory Group (WQAG) was formed in August 1999 to assist the Indiana Department of Environmental Management (IDEM) in developing water quality policies that provide necessary protections of our water resources, that make sense for Indiana and that comply with federal laws and regulations. Representatives of the regulated community, public interest community and government, including state legislators and mayors, were selected by the Commissioner to participate in this group. Its regular meetings were formal with agendas; less formal additional work group and subcommittee meetings were convened as needed. The effort continued for over two years.

The focus of the WQAG has been to help IDEM shape sound policies on the five key water quality issues of:

- The Impact Of Wet Weather Events On Municipal Wastewater Treatment Facilities
- Special Designations Of Water Bodies Policy
- Antidegradation Policy For Water Bodies Outside The Great Lakes Basin
- Biological Integrity Water Quality Criteria Policy
- Sediment Water Quality Criteria Policy

II. Five Policy Areas

A. The Impact Of Wet Weather Events On Municipal Wastewater Treatment Facilities

Communities with Combined Sewer Overflows expressed concern about the absence of IDEM guidance on what an acceptable Long Term Control Plan (LTCP) would require. There also was concern about an interpretation by some IDEM staff that the state policy under its water quality standard would force all municipalities to do complete separation instead of finding the most cost-effective strategy to address urban run-off and CSOs simultaneously.

The WQAG recommended that IDEM should work with a stakeholder group to prepare a written Long Term Control Plan guidance document for CSO communities. A stakeholder WQAG Technical Advisory Group chaired by IDEM successfully completed that task resulting in a non-rule policy. A statute change in SEA 431 addressed the other CSO concerns without WQAG deliberation.

B. Special Designation of Water Bodies Policy

At the start of the WQAG deliberations in 1999, the state had two antidegradation standards for Outstanding State Resource Waters, one for the non-Great Lakes watersⁱ and one for the Great Lakes system watersⁱⁱ.

The non-Great Lakes antidegradation standard for outstanding state resources waters (OSRWs) stated that these waters shall be maintained and protected in their present high quality without degradation. The term degradation was not defined by the 1990 rule and did not contain antidegradation implementation procedures.

Indiana's GLI rule (signed January, 1997) clarified the meaning of degradation for discharges into the Great Lakes Basin OSRWs. For these OSRWs, the antidegradation standard also stated that outstanding state resource waters shall be maintained and protected in their present high quality without degradation. The GLI rule does contain implementation procedures. Simply stated, new or increased discharges would be allowed but would have to meet the ambient concentration of a pollutant in the receiving waters. Also, certain specified activities were exempt from being considered to cause degradation.

The policy of deciding which waters would be OSRWs and what should be the nature of the special protection for the waters is strictly a state policy.

Rulemaking was proceeding through advice from a small stakeholder group from the Great Lakes Basin to complete this policy for the Great Lakes (327 IAC 5-2-11.7).

The WQAG found that new discharges should be allowed in an OSRW provided there is overall improvement to the water quality of the receiving waters. Antidegradation procedures and policies should be specified clearly in the rules.

A statute change in SEA 431 in the 2000 General Assembly was consistent with these WQAG findings. SEA 431 also required the Water Pollution Control Board to establish a policy for assigning waters into special designation categories and defined degradation. The Great Lakes OSRW rule was final adopted in June, 2000, prior to the effective date of SEA 431 to complete the 1997 rulemaking (current 327 IAC 5-2-11.7).

Currently, there is an inconsistency between the state law change mandated by SEA 431 concerning OSRWs and the existing state rules on OSRW antidegradation standards and implementation procedures. Where existing rules appear to limit the ability of new dischargers locating on an OSRW, SEA 431 specifically requires a rule change to allow new dischargers into OSRWs. At the present time, a request for a new discharge into an OSRW has not been allowed because of the inability of a new dischargers meeting the ambient stream concentration. The next step is promulgation of rules to implement the SEA 431 statutes.

C. Antidegradation Policy For Water Bodies Outside The Great Lakes Basin

The proposed state antidegradation policy on which the WQAG deliberated is for new or increased discharges in situations where the water body is "high quality" for the pollutant parameter proposed to be increased. ("High quality" meaning that the level of a pollutant parameter in the water body is less than its water quality criterion.)

The NPDES permit system itself imposes constraints on the discharge that ensure that the impact on receiving waters is within the water quality standards. If the water body is impaired for the parameter, the discharge will not be permitted to cause the situation to worsen. If the water body is high quality for the parameter, the permit limit itself, prior to the application of the antidegradation policy, will allow the discharge only if that water remains "high quality."

The fundamental federal regulation [40 CFR 131.12(a)(2)] being discussed for the specifics of implementation of antidegradation in Indiana states that "(w)here the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds...that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water are located." The WQAG, following one of the conflicting federal guidance policies related to this, discussed implementation assuming a two-part antidegradation demonstration. This

requires independent judgments that the technological decision about reduction of discharge is appropriate and that the activity that causes the incremental lowering of water quality accommodates important economic or social activity in the area. The state is to determine what is meant by "significantly lowering water quality" and how to decide whether each test is met.

The attempt by the WQAG was to craft a policy option for the two antidegradation demonstration decisions such that the demonstration would not be burdensome but still be effective for environmental quality protection.

The types of situations addressed range from minor permit adjustments due to a change from the use of one chemical to another in a manufacturing process, to a major expansion of an existing operation, to an entirely new facility located on the water body. The permits could be for unique industrial processes to permanent storm water runoff change from suburban commercial or residential development to remediation projects anticipated to last several years. The water bodies range from streams that are naturally dry most of the time to major rivers and from small ponds to lakes to Lake Michigan.

Currently, there is an antidegradation implementation rule for the Great Lakes Basin portion of the Indiana. For the rest of the state there is only an antidegradation standard and no implementation rules. Building on the state Great Lakes rule language for antidegradation, the goal of the WQAG was to deliberate on policy ideas to help the agency make antidegradation decisions that were consistent, predictable and protective.

As stated above, the following policy findings only cover high quality waters. The WQAG did not discuss impaired waters or any special antidegradation policies for those waters designated as exceptional use waters, Outstanding State Resource Waters or Outstanding National Resources Waters. Further, these findings do not address nonpoint source increases.

1. Estimation of Background Concentration of Specific Parameters in Receiving Waters

An NPDES discharge permit limit depends, in part, on the ambient (existing) concentration of the parameter present in the receiving water upstream of a new or existing discharge during the low (dry weather) flow of the water body. Therefore knowing this ambient value is important. However, the ambient concentration of many parameters in surface waters varies depending on the intensity and frequency of upgradient precipitation events and the resulting storm water runoff, the number of dischargers upstream of a discharger and the variability of flow from these dischargers. Seldom are stream flow conditions reflective of the low flow of a stream when water samples are collected. Also, IDEM has a limited amount of existing ambient data.

The question the WQAG focused on is: what is an acceptable way to estimate the ambient concentration in the water at low flow stream conditions from samples taken at other times?

The WQAG found that a statistical averaging of samples taken at variable stream flows across a representative time-frame was the most practical policy from a program resource standpoint, and usually the most conservative. A guidance document reflecting this policy was prepared by a representative technical stakeholder group in cooperation with IDEM and was accepted by the WQAG.

The WQAG did not resolve two other ambient issues. One, the ambient guidance document does not cover parameters that are dependent on stream condition variables other than stream flow. Two, the guidance document does not address what to do when, during periods of extremely high stream flow, it is determined that the water body is impaired.

2. Significant Lowering of Water Quality/De Minimis

IDEM, in accordance with federal regulations, requires a technical as well as an economic or social determination be made for a new or increased discharge that would significantly lower water quality. Except for specific parameters in several specific geographic areas, the federal regulations and State rules are unclear on what precisely is meant by this lowering of water quality. Policies about both the nature of this determination and the determination itself are the responsibility of the state.

The WQAG noted that State rules prevent an NPDES permit limit to cause the receiving water quality itself to exceed the water quality standards. Also, there are a number of conservatisms in the permit process to make the actual discharges lower than even that. Thus the WQAG found that this policy should address long-term environmental impacts, not short-term impacts.

The WQAG found three options for the commissioner to consider as its policy outside the Great Lakes Basin.

- a) The option supported by the environmentalist community is that any permit limit increase by definition lowers the water quality. That community is not confident that we know enough about the impact of constituents on water quality to be certain that the standards themselves are protective and, even were that the case, any increase is an incremental step towards less protection. It argues that a precautionary principle should be used when such uncertainty exists.¹
- b) The option favored by the regulated community is that any discharger operating under an NPDES permit program will by definition always discharge in a manner that will not lower water quality and hence should not require a special antidegradation demonstration. The reasoning is that the state water quality standard is the measure of achievement of the designated use for the water. When the standard in the receiving water is met, the quality is always high. No incremental changes in concentration that happen below the "no-harm" concentration affect the quality of the water. The antidegradation policy was developed for situations with no NPDES permits and no state standards.
- c) The option that is a middle position is one that acknowledges that a type of lowering of water quality is possible even as the water body concentration standards are met. However, any reasonable impact anticipated can vary from negligible to significant and it is only that which is significant that the state should focus on. In determining "significance" there is a "de minimis" increase below which the impact should be considered insignificant. The regulation should establish a threshold increase in a permit limit to trigger the antidegradation demonstration that would vary depending on parameter and circumstance. That threshold should be expressed as a percentage of the unused loading capacity present at the time the proposed discharge would occur.

The threshold for Bioaccumulating Chemicals of Concern (BCCs) should be zero. For non-BCCs, the magnitude of the threshold should depend on situational factors. One factor is whether the parameter remains in the environment a long time or is quickly volatilized or degraded. Another factor is whether the flow of the discharge is very big or very little compared to the water

¹ The environmentalist definition of the Precautionary Principle used here is from the Wingspread Conference: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken, even if some cause and effect relationships are not fully established scientifically."

body it is going into. A third factor is whether the standard is a criterion established by rule with adequate toxicological information or whether it is a Tier 2 value, as was proposed for manganese and iron, and is not considered toxic, but ends up with artificially strict standards because of the Tier 2 methodology when there is incomplete toxicity data.

At the other extreme, there should be a class of discharges that, because of nature of the discharge, should be considered by rule never to cause a significant lowering of water quality for the purpose of this policy. This would be a list of named activities that the state is confident this applies to, such as, general NPDES permits which have uniform conditions for uniform situations.

3. Can the Discharge Impact be Reduced?

If a proposed increase in a discharge limit is determined to significantly lower water quality, two antidegradation demonstrations are to be made sequentially. The first is the demonstration that the discharge increase is necessary, from a technical perspective. The second is that the increase in a discharge will accommodate important economic or social development in the area of the discharge. This second demonstration is discussed in 4. below.

The state is to establish a policy about what “necessary” means and how to measure it. While there is no specific federal guidance on this, there is general federal guidance about how to review for better control technologies, about whether the chemical use in the process could be changed to a positive effect or whether the wastewater discharge itself could be discharged someplace else.

The WQAG found three options for the commissioner to consider.

- a) The option favored by the environmental advocates is that each situation be evaluated individually. The state has experience with different dischargers in different settings and knows that some dischargers may be able to do better because a discharger in a similar situation did so. This is a site-specific decision by IDEM based on the information submitted, public input and national data search.
- b) The option favored by the regulated is that no further state demonstration is necessary if the permit complies with either the Best Available Technology Economically Feasible (BAT), as determined by EPA, or the state's water quality-based effluent limits (WQBELs), whichever is more stringent. That defines what the federal government considers the “best” technology or, if meeting a WQBEL is necessary, the technology that can treat wastewater better. Just because one company can use a technology to great effect in no way means that that technology can be used to the same effect by another company. A BAT judgment requires enormous federal resources.
- c) The option that is a middle position would require all applicants to submit a written feasibility evaluation of control technologies, pollution prevention and alternative disposal. This would be available for public review.

Under the middle position option, the IDEM formal decision-making criteria would then be divided into four categories for industrial discharge. It is recognized that some BAT may be out-of-date but that for the state itself to make a BAT-type decision assessing national feasibility in an industry would be prohibitively resource-intensive and take too much time per permit application.

- a) An industry under a federal effluent guideline with a BAT affirmed in the most recent federal review will be assumed to be using the best control technology for that industry (or better with a water quality-based effluent limit).
- b) If EPA is reviewing the BAT, the state should allow the existing BAT to stand but new permits use new BAT immediately on promulgation.
- c) If there is no direct industry BAT for the parameter but there is a BAT which IDEM considers to have the equivalent control of the parameter, that is to be used.
- d) If there is no BAT affirmed by EPA or under review by EPA, the state decides whether the discharge is necessary by an independent determination. The regulation should require IDEM to prepare for public review tables of control technologies appropriate to each industry for the applicant to evaluate. It should establish range of cost-effectiveness above which it is always too high and below which is always acceptable. It should establish a threshold of net increased costs. It should establish guidelines for affordability.

There should also be a special category for consideration for when and what should be the character of a "necessary" demonstration for a POTW.

There should be a special category for commercial and residential developments with NPDES discharges.

4. Accommodates Important Economic or Social Development in the Area

After a proposed change is determined to be significant and after the agency has determined that as much as possible technologically has been done to reduce the impact, the second and final part of the antidegradation demonstration is that the activity causing the increase "accommodates important economic or social development in the area."

Federal regulation outlines the type of information that might be used as evidence in such a determination, but there is no guidance about how to evaluate whether the information proves that the activity does meet the test. It is left to each state to determine who decides whether the activity accommodates economic or social development and what should be the factors in their judgment

The WQAG found there are three options for the commissioner to consider.

- a) The option favored by the environmentalist community is one that would have IDEM make a site-specific decision after a local hearing in the area for each proposed lowering of water quality. The citizens would be educated about the character of the activity and the nature of the environmental impact.

- b) The option favored by the regulated is one that has no special decision by IDEM. In Indiana land use decisions are the purview of local government. Any activity in a local area that is allowed by local provisions is one by definition that has met the condition of accommodating important economic or social development in the area.
- c) A third option is a middle position that separates the decision into three different pathways depending on the circumstance. For existing facilities and developments, the presumption by regulation would be that the existing activity accommodates important economic or social development in the area. No explicit decision process is needed by IDEM for those situations, but those that disagree with the presumption can, during the public comment period for the draft permit, submit comments to IDEM in favor or against the proposal.

For new facilities or developments, the presumption is that if a local approval allowing public input was accomplished for the new activity and if information was made available during that process to the public about both the nature of activity's projected accommodation of economic or social development in the area and about any change to the water body, that the accommodation test was met. Those that disagree with the presumption can during the public comment period for the draft permit. A local approval process could be by local government such as zoning or by another state agency, such as DNR, if the decision involves opportunity for effective local involvement.

For other new activities, such as those applicants not wishing or able to use a local approval process, the IDEM decision must be accomplished through a local hearing with guidance specified in regulation about how it would make a consistent decision.

IDEM should establish written principles of how it will make its decision including principles such as:

- a) whether there is a there is a predicted net improvement of a deficient quality of life in the area or maintenance of satisfactory quality of life.
- b) whether the negative aspects and positive aspects on an economic or social well-being are allocated fairly among different jurisdictions or different peoples in the area.
- c) whether both the short-term and the long-term negative aspects and positive aspects to social and economic status have been considered.
- d) whether the activity has special land use attributes, positive or negative, such as criteria that favor new activity on urban brownfield site compared to a rural greenfield site.
- e) whether the characteristics of the water body are changed such as more or less base flow

D. Biological Integrity Water Quality Criteria Policy

Biological integrity is the measure of the aquatic vitality of a water body by evaluating the number and type of species and individual organisms present compared against an understanding of what should be present. It is used in research to compare similar aquatic regimes. The policy question is whether biological integrity is a well enough developed analytical tool such that the measure is reproducible by different professionals and calibrated predictably to distinguish "good" from "bad" to have it serve as an understandable and appropriate legal water quality standard.

The WQAG found from experts in the field that the tool is excellent and appropriate as a research tool to evaluate Indiana waters but is yet far from adequate to serve as an enforceable standard. The WQAG found that its use should be increased in the state to inform Indiana water policy priorities but that it not be promulgated as a standard.

E. Sediment Water Quality Criteria Policy

Sediment quality is several different policies. It is the presence of chemical contaminants in sediments, either naturally occurring or anthropogenic, that would pose short and long term toxic effects to the aquatic systems and humans. It is the presence of human-generated components such as sewage that create an unnatural anaerobic environment toxic to aerobic species. It is presence of human-caused conditions to make a naturally anaerobic situation such as a swamp aerobic and thus toxic to the anaerobic organisms. It is the presence of exotic flora and fauna out-competing the native system. It is the very presence of sediments in the wrong amounts, in the wrong place and wrong time (such as covering spawning grounds of certain fish in spring).

The policy question is whether sediment quality itself is a well enough developed analytical tool such that the measure is reproducible by different professionals and calibrated predictably to distinguish "good" from "bad" to have it serve as an understandable and appropriate legal water quality standard.

The WQAG found from experts in the field that the tool is excellent and appropriate as a research tool to evaluate Indiana waters but is yet far from adequate to serve as an enforceable standard. The WQAG found that its use should be increased in the state to inform Indiana water policy priorities but that it not be promulgated as a standard.

ⁱ 327 IAC 2-1-2
ⁱⁱ 327 IAC 2-1.5-4

Findings of the Water Quality Advisory Group

I. Introduction

A. Purpose and Function of the Water Quality Advisory Group

The Water Quality Advisory Group (WQAG) was formed in August 1999 to assist the Indiana Department of Environmental Management (IDEM) in developing water quality policies that provide necessary protections of our water resources, that make sense for Indiana and that comply with federal laws and regulations. Representatives of the regulated community, public interest community and government, including state legislators and mayors, were selected by the Commissioner to participate in this group. Its regular meetings were formal with agendas; less formal additional work group and subcommittee meetings were convened as needed. The effort continued for over two years.

The focus of the WQAG has been to help IDEM shape sound policies on the five key water quality issues of:

- The Impact Of Wet Weather Events On Municipal Wastewater Treatment Facilities
- Special Designations Of Water Bodies Policy
- Antidegradation Policy For Water Bodies Outside The Great Lakes Basin
- Biological Integrity Water Quality Criteria Policy
- Sediment Water Quality Criteria Policy

B. Explanation of Findings/Report

The report describes the five policy issues of the WQAG deliberation. For the first two issues, municipal wet weather and special waterbody policy, the WQAG spent only several months on to give general direction to a solution. The General Assembly proceeded to establish policy in these areas and WQAG was not asked by the Commissioner to continue with that work.

The WQAG similarly spent only a limited amount of time on the final two issues in the report, biological integrity and sediment quality. For these two issues the WQAG the reason for the short time was that it did reach clear conclusions supported by expert testimony from federal agencies (US Fish and Wildlife Service and US Environmental Protection Agency).

The greatest amount of study and deliberation was devoted to the four components of state antidegradation policies for high quality waters outside the Great Lakes Basin. Core policies, long-unresolved, were discussed intensely.

The first is standard policy about the measurement of ambient water quality parameters for the purpose of antidegradation decisions. (Section IV-B)

The second is policy about the nature and magnitude of the threshold of a lowering of water quality of a new or increased discharge that would be considered to require an antidegradation demonstration. (Section IV-C)

The third is policy about a consistent criteria and process to evaluate whether all due consideration had been given to feasibility of reducing the discharge beyond the water quality-based effluent limit. (Section IV-D)

The fourth is policy about how the State makes the decision of whether an activity that causes a significant lowering in water accommodates important economic and social development in the area. (Section IV-E)

II. The Impact Of Wet Weather Events On Municipal Wastewater Treatment Facilities

A. Issue

Communities with Combined Sewer Overflows expressed concern about the absence of IDEM guidance on what an acceptable Long Term Control Plan (LTCP) would require. There also was concern about an interpretation by some IDEM staff that the state policy under its water quality standard would force all municipalities to do complete separation instead of finding the most cost-effective strategy to address urban run-off and CSOs simultaneously.

B. Discussion

The WQAG heard the challenge but before it could engage as a body in any depth, an IDEM-led stakeholder group, reporting periodically to the WQAG, wrote one set of options and then the General Assembly established a particular solution for some of the contentious issues without the WQAG involvement.

C. Conclusion

The WQAG recommended that IDEM should work with a stakeholder group to prepare a written Long Term Control Plan guidance document for CSO communities. A stakeholder WQAG Technical Advisory Group chaired by IDEM successfully completed that task resulting in a non-rule policy. A statute change in SEA 431 addressed the other CSO concerns without WQAG deliberation.

III. Special Designations Of Water Bodies Policy

A. Issue

Federal law and state law allow certain water bodies to be protected to a greater extent than others water bodies due to their unique ecological or aesthetic characteristics. The state waters are called Outstanding State Resource Waters (in the past, there was a similar category of "Exceptional Use waters"). The category in federal law, with assignments by the state, (in Indiana the assignment is responsibility of the General Assembly) is called "Outstanding National Resource Waters."

The antidegradation policy for the Indiana Outstanding State Resource Waters is the responsibility of the state. The WQAG was asked to review and comment on that policy.

B. Discussion

At the start of the WQAG deliberations in 1999, the state had two antidegradation standards, one for the non-Great Lakes waters and one for the Great Lakes Basin waters.

The non-Great Lakes antidegradation standard for outstanding state resources waters (OSRWs) stated that these waters shall be maintained and protected in their present high quality without degradation. The term degradation was not defined by the 1990 rule and did not contain antidegradation implementation procedures.

The GLI rule (signed January, 1997) clarified the meaning of degradation for discharges into the Great Lakes Basin OSRWs. For these OSRWs, the antidegradation standard also stated that outstanding state resource waters shall be maintained and protected in their present high quality without degradation. The GLI rule does contain implementation procedures. Simply stated, new or increased discharges would be allowed but would have to meet the ambient concentration of a pollutant in the receiving waters. Also, certain specified activities were exempt from being considered to cause degradation.

The policy of deciding which waters would be OSRWs and what should be the nature of the special protection for the waters is strictly a state policy.

Rulemaking was proceeding through advice from a small stakeholder group from the Great Lakes Basin to complete this policy for the Great Lakes (327 IAC 5-2-11.7).

The WQAG found that new discharges should be allowed in an OSRW provided there is overall improvement to the water quality of the receiving waters. Antidegradation procedures and policies should be specified clearly in the rules.

A statute change in SEA 431 in the 2000 General Assembly was consistent with these WQAG findings. SEA 431 also required the Water Board to establish a policy for assigning waters into special designation categories and defined degradation. The Great Lakes OSRW rule was final adopted in June, 2000, prior to the effective date of SEA 431 to complete the 1997 rulemaking (current 327 IAC 5-2-11.7).

C. Conclusions

Currently, there is an inconsistency between the state law change mandated by SEA 431 concerning OSRWs and the existing state rules on OSRW antidegradation standards and implementation procedures. Where existing rules appear to limit the ability of new dischargers locating on an OSRW, SEA 431 specifically requires a rule change to allow new dischargers into OSRWs. At the present time, a request for a new discharge into an OSRW has not been allowed because of the inability of a new dischargers meeting the ambient stream concentration. The next step is promulgation of rules to implement the SEA 431 statutes.

IV. Antidegradation Policy for Waters Outside the Great Lakes Basin

A. Introduction to Antidegradation

1. Issue

The proposed state antidegradation policy on which the WQAG deliberated is for new or increased discharges in situations where the water body is "high quality" for the pollutant parameter proposed to be increased. ("High quality" meaning that the level of a pollutant parameter in the water body is less than its water quality criterion.)

The NPDES permit system itself imposes constraints on the discharge that ensure that the impact on receiving waters is within the water quality standards. If the water body is impaired for the parameter, the discharge will not be permitted to cause the situation to worsen. If the water body is high quality for the parameter, the permit limit itself, prior to the application of the antidegradation policy, will allow the discharge only if that water remains "high quality."

The fundamental federal regulation [40 CFR 131.12(a)(2)] being discussed for the specifics of implementation of antidegradation in Indiana states that "(w)here the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds...that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water are located." The WQAG, following one of the conflicting federal guidance policies related to this, discussed implementation assuming a two-part antidegradation demonstration. This requires independent judgments that the technological decision about reduction of discharge is appropriate and that the activity that causes the incremental lowering of water quality accommodates important economic or social activity in the area. The state is to determine what is meant by "significantly lowering water quality" and how to decide whether each test is met.

The attempt by the WQAG was to craft a policy option for the two antidegradation demonstration decisions such that the demonstration would not be burdensome but still be effective for environmental quality protection.

The types of situations addressed range from minor permit adjustments due to a change from the use of one chemical to another in a manufacturing process, to a major expansion of an existing operation, to an entirely new facility located on the water body. The permits could be for unique industrial processes to permanent storm water runoff change from suburban commercial or residential development to remediation projects anticipated to last several years. The water bodies range from streams that are naturally dry most of the time to major rivers and from small ponds to lakes to Lake Michigan.

Currently, there is an antidegradation implementation rule for the Great Lakes Basin portion of the Indiana. For the rest of the state there is only an antidegradation standard and no implementation rules. Building on the state Great Lakes rule language for antidegradation, the goal of the WQAG was to deliberate on policy ideas to help the agency make antidegradation decisions that were consistent, predictable and protective.

The following policy findings only cover high quality waters. The WQAG did not discuss any special antidegradation policies for those waters designated as exceptional use waters, Outstanding State Resource Waters or Outstanding National Resources Waters. Further, these findings do not address nonpoint source increases.

2. Discussion

a) The Antidegradation Regulation Being Implemented

The federal regulation that is to be implemented in state regulation and policy is brief and ambiguous. Below are copies of the relevant text for:

- Federal Regulation - Antidegradation Standard
- Indiana Antidegradation Regulation (applicable outside the Great Lakes Basin)
- Federal Regulation for Antidegradation for BCCs in Great Lakes Basin
- Current Indiana Antidegradation Standard In the Great Lakes Basin
- IDEM Triennial Review Proposed Antidegradation Language - February 1999

(1) Federal Regulation - Antidegradation Standard

40 CFR 131.12(b) "Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality

shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully."

(2) Indiana Antidegradation Regulation (applicable outside the Great Lakes Basin)

327 IAC 2-1-2 (1) " For all waters of the state, existing beneficial uses shall be maintained and protected. No degradation of water quality shall be permitted which would interfere with or become injurious to existing and potential uses.

"(2) All waters whose existing quality exceeds the standards established herein as of February 17, 1977, shall be maintained in their present high quality unless and until it is affirmatively demonstrated to the commissioner that limited degradation of such waters is justifiable on the basis of necessary economic or social factors and will not interfere with or become injurious to any beneficial uses made of, or presently possible, in such waters. In making a final determination under this subdivision, the commissioner shall give appropriate consideration to public participation and intergovernmental coordination."

(3) Federal Regulation for Antidegradation for BCCs in Great Lakes Basin

40 CFR 132 Appendix E

I. Antidegradation Standard:

"...increased loadings of BCCs to surface waters of Great Lakes System..."

"Where, for any parameter, the quality of the waters exceed levels necessary to support the propagation of fish, shellfish, and wildlife and recreation in and on the waters, that water shall be considered high quality for that parameter..."and".. that quality maintained and protected unless State ... finds...that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located."

II. Implementation Procedures:

"procedures not apply to...1. Short-term, temporary (i.e. weeks or months) lowering of water quality; 2. Bypasses that are not prohibited at 40 CFR 122.41(m); and 3. Response actions pursuant to" CERCLA

III. Antidegradation Demonstration

"The antidegradation demonstration shall include the following:

- A. Pollution Prevention Alternatives Analysis
- B. Alternative or Enhanced Treatment Analysis
- C. Important Economic or Social Development Analysis"

IV. Antidegradation Decision

"Once the Director determines that the information provided by the entity proposing to increase loadings is administratively complete, the Director shall use that information to determine **whether or not the lowering of water quality is necessary, and, if it is necessary, whether or not the lowering of water quality will support important social and economic development in the area.** If the proposed lowering of water quality is either not necessary, or will not support important social and economic development, the Director shall deny the request to lower water quality. If the lowering of water quality is necessary and will support important social and economic development, the Director may allow all or part of the proposed lowering to occur as necessary to accommodate the important social and economic development. In no event may the decision reached under this section allow water quality to be lowered below the minimum level required to fully support existing and designated uses."

(4) Current Indiana Antidegradation Standard In the Great Lakes Basin

327 IAC 2-1.5-4 " (a) For all surface waters of the state within the Great Lakes system, existing instream water uses and the level of water quality necessary to protect existing uses shall be maintained and protected. Where designated uses of the waterbody are impaired, there shall be no lowering of the water quality with respect to the pollutant or pollutants that are causing the impairment.

"(b) Any surface water of the state within the Great Lakes system whose existing quality for any parameter exceeds the criteria established within this rule shall be considered high quality for that parameter consistent with the definition of high quality water found in this rule; and that quality shall be maintained and protected unless the commissioner finds, after full satisfaction of intergovernmental coordination and public participation provisions under 327 IAC 5-2-11.3, that **allowing lower quality is necessary and accommodates [sic] important economic or social development in the area in which the waters are located.** In allowing such degradation, the commissioner shall assure water quality adequate to protect existing uses fully. Further, the commissioner shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all-cost effective and reasonable best management practices for nonpoint source control. The commissioner shall utilize the antidegradation implementation procedures under 327 IAC 5-2-11.3 in determining if a significant lowering of water quality will be allowed. "

(5) IDEM Triennial Review Proposed Antidegradation Language - February 1999

327 IAC 2-1-2 (b) "The Tier 2 antidegradation standard for high quality waters (HQW's) is as follows:

"(1) The surface waters of the state whose existing quality for any parameter is better than the water quality criteria for that parameter established in section 6.1 of this rule shall be considered high quality for that parameter consistent with the definition of high quality waters.

"(2) This high quality of water shall be maintained and protected unless the commissioner finds, after full satisfaction of intergovernmental coordination and public participation of Indiana's continuing planning process and the provisions in section 2.4 of this rule that **allowing a significant lowering of water quality is necessary and**

accommodates important economic or social development in the area in which the surface waters are located. In allowing a significant lowering of water quality, the commissioner shall assure:

- (A) water quality adequate to fully protect designated uses; and
- (B) that there be achieved the highest statutory and regulatory requirements for all new and existing point sources and, where authority exists, all cost-effective and reasonable best management practices for nonpoint source control."

As can be readily observed, the federal language is inconsistent on key nuances. The should maintain language consistent with the federal but there clearly are areas of ambiguity that the state policy must be precise about for efficient implementation of state policies.

While recognizing all of these factors are interrelated, for practical purposes of not having a complete evaluation of every situation, the WQAG has approached this by considering significant lowering as a scientific question about the receiving water quality, the necessary question as a technological question about pollution reduction and the economic or social development question as a economic/social question of the lowering of water quality to the area.

b) Terminology "significant lowering" or "de minimis" for water quality lowering threshold for antidegradation demonstration

Whenever a significant lowering of water quality, as it is called in the 1995 Great Lakes Water Quality Guidance final regulation (in the draft 1993 Great Lakes regulation it is called a discharge greater than de minimis), is anticipated to occur in a high quality water, the State must perform an antidegradation review. The primary policy question is: what percent of this unused loading capacity value should the state consider to be "significant lowering of water quality?" Or, alternatively stated, what is the "de minimis" value of the unused loading capacity, as a percent, below which the state will not consider an increase in discharge a "significant lowering of water quality?"

During the WQAG discussion on ULC, the percent that would be identified as not significant was called "de minimis," implying that some water quality issues were too trivial to be of concern to the environment. Concern was voiced that "de minimis" was not the correct term because any degradation that might occur was more than what would be considered by the Clean Water Act or the Indiana water protection statute. What the WQAG decided is that "de minimis" is better described as simply defining "significant," something clearly envisioned by the federal Great Lakes guidance when it established this to only apply to "significant" situations. Doing that, however, then ignores the usage of the term "de minimis" in some key federal guidance documents. The WQAG continued its discussion understanding that the two different terms would be used synonymously.

c) Components of the Decision

(1) Quality as Measured by Pollutant

What is meant by "Antidegradation?" At its most basic, antidegradation means that dischargers (either new dischargers or existing dischargers planning to expand) of wastewater into surface waters (streams, rivers, and lakes) will not be allowed to worsen (or degrade) the existing condition of the surface water unless there are good economic or social reasons to do so.

The federal government, in the Great Lakes Water Quality Guidance at 40 CFR 132 Appendix E, I. Antidegradation Standard, has stated a preference that all components of the antidegradation policy be a pollutant-by-pollutant decision, but only applied this standard to bioaccumulative chemicals of concern (BCCs). Indiana chose to expand the EPA policy to cover non-BCCs, also. In contrast, the federal regulation that covers the non-Great Lakes Basin part of Indiana, 40 CFR 131.12, addresses the quality of water in general and does not specify pollutant-by-pollutant determination

"Existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected" and "Where quality of the water exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds...that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located."

Thus far, the only specific, quantitative assignment of a value to trigger an antidegradation demonstration that is required by federal rule is for the class of parameters called BCCs. The Indiana BCC list, as eventually approved (but not as defined by EPA) incorporates the aspects of bioaccumulation (bioaccumulation factor of 1000 or greater), of persistence and of toxicity, although bioaccumulation is the only aspect in the formal definition. The federal rules state that for the Great Lakes Basin, an antidegradation demonstration is required for any increase in a BCC with certain exceptions. The argument for this threshold for antidegradation for this class of parameters is due to the fact that the concentration standard for the water column does not incorporate the potential harm from a compound that does not wash away (Great Lakes Basin catchment), does not degrade, has high solubility in fat tissue and will eventually accumulate up the food chain and be consumed by families of sports fishermen and by wildlife predators. Inorganic mercury was included as a BCC not because it meets the criteria but because it could gradually be converted in sediments to methyl mercury, which meets the BCC criteria. Indiana adopted this policy by regulation.

(2) Different Antidegradation Standards and Implementation Procedures

There are four classifications of water bodies affected by the antidegradation policy: 1) impaired waters, 2) high quality waters, 3) Outstanding State Resource Waters (and exceptional use waters), and 4) Outstanding National Resource Waters. The antidegradation standards and implementation procedures are different for each classification. Impaired waters cannot be made any worse. High quality waters are allowed to be "degraded" if there are good reasons presented by the discharger. OSRW waters are allowed to be "degraded" but not as much as a high quality water. ONRW waters cannot be degraded at all, except for emergency situations.

(3) Certain Model Policy Concepts for Implementation of Antidegradation

Federal regulations do not contain antidegradation implementations procedures for non-BCCs in high quality waters. It is possible to build procedures from ideas in related policies.

Although not mandated by the federal GLI rules (which requires a state to do something but offers no direction as to what), Indiana also established an antidegradation demonstration standard in the Great Lakes Basin for non-BCCs. For this class of parameters, it defined

significant lowering as a proposed increase in loading that would both increase the concentration of the parameter in the receiving water outside the mixing zone and would either be greater than ten per cent of the existing unused loading capacity or, after discharge, allow less than ten percent of the initial total loading capacity to remain unused, or both (327 IAC 5-2-11.3). The "existing unused loading capacity" remains the same value from the time after the first permit is issued for the discharge of the parameter through all subsequent increases.

For Outstanding State Resource Waters in the Great Lakes Basin, 327 IAC 5-2-11.7 (published in the November 1, 2000 Indiana Register), the trigger for antidegradation demonstration is when the monthly average mass discharge increase is proposed to be greater than ten per cent of the unused loading capacity which would be established at time the request to lower water quality is considered. Also, this provision addresses a new or increased discharge requiring a permit into a tributary to an OSRW. For a tributary discharger, the 11.3 rules apply and that there can be no significant lowering of water quality in the OSRW.

The Indiana General Assembly does require, under Senate Enrolled Act (SEA) 431 (through rulemaking by the Water Board that is yet to be completed), the establishment of a threshold (called "de minimis" in SEA 431) to be used when the antidegradation decision is to be made in Outstanding State Resource Waters. SEA 431 asks the Board to provide procedures to allow pollutant load increases if there will be an overall improvement in water quality for the OSRW.

Under current Indiana rules, for waters in the Great Lakes system, existing instream water uses and the level of water quality necessary to protect existing uses shall be maintained and protected. Under current Indiana rules, for waters outside of the Great Lakes system, existing beneficial uses shall be maintained and protected. No degradation shall be permitted which would interfere with or become injurious to existing or potential uses.

B. Estimation of the Ambient Concentration of Specific Parameters in Receiving Waters at Critical Flow

1. Issue

An NPDES discharge permit limit depends, in part, on the ambient (existing) concentration of the parameter present in the receiving water upstream of a new or existing discharge during the low (dry weather) flow of the water body. Therefore knowing this ambient value is important. However, the ambient concentration of many parameters in surface waters varies depending on the intensity and frequency of upgradient precipitation events and the resulting storm water runoff, the number of dischargers upstream of a discharger and the variability of flow from these dischargers. Seldom are stream flow conditions reflective of the low flow of a stream when water samples are collected. Also, IDEM has a limited amount of existing ambient data.

The question the WQAG focused on is: what is an acceptable way to estimate the ambient concentration in the water at low flow stream conditions from samples taken at other times?

2. Discussion

IDEM must know the ambient concentration of pollutants in a water body to determine if it is an impaired water or a high quality water. Also, this ambient information must be known to calculate water quality-based effluent limitations (WQBELs). The main issue that needed

resolution was identifying a good data set. A subgroup of the WQAG held a number of meetings and decided that a statistical approach would be the best method to use. A copy of the statistical approach the WQAG recommended for a consistent policy is in the appendix section of the document.

3. Conclusion

The WQAG found that a statistical averaging of samples taken at variable stream flows across a representative time-frame was the most practical policy from a program resource standpoint, and usually the most conservative. A guidance document reflecting this policy was prepared by a representative technical stakeholder group in cooperation with IDEM and was accepted by the WQAG.

The WQAG did not resolve two other ambient issues. One, the ambient guidance document does not cover parameters that are dependent on stream condition variables other than stream flow. Two, the guidance document does not address what to do when, during periods of extremely high stream flow, it is determined that the water body is impaired.

C. Significant Lowering of Water Quality/De Minimis

1. Issue Summary

IDEM, in accordance with federal regulations, is required to make a policy determination about the proposed impact on the quality of the receiving waters for a new or increased discharge that would be a "significant lowering of water quality." Except for specific parameters in several specific geographic areas, the federal regulations and State rules are unclear on precisely what is meant by this lowering of water quality. Policies about both the nature of this determination and the determination itself are the responsibility of the state.

Information about significant lowering policies of representative states in the Midwest was examined. There was a wide variation among the states in the numeric values for the increment of an increase that would trigger an antidegradation. However it was impossible to understand the significance because each state used basic terms such as "unused loading capacity" in different ways and because each state had different implementation policies.

When the Indiana rulemaking begins on this, we recommend that the de minimis/significant lowering policies of some other states be understood. This requires a careful crafting of the precise questions to be asked based on the findings of this section. It requires in-depth conversation with several people in different parts of the NPDES program at each state to understand what they mean and how they actually are implementing the policy.

2. Discussion of Significant Lowering of Water Quality/De Minimis Policy Options

a) Issue Background

The phrase, significant lowering of water quality, was developed by US EPA to acknowledge that there are increases in the discharge of pollutants that are so minor that antidegradation policy should not apply.

The threshold for the amount and character of an increase requiring an antidegradation demonstration is a state policy decision that must be made consistent with US EPA regulations. It is not a scientific decision related to a measure, such as a toxicity standard or a

designated use. An appropriate state policy of how much of a mass increase in a discharge is enough to trigger an antidegradation review must account for environmental factors, such as the nature of the pollutant being discharged (e.g. toxicity, bioaccumulation) and the ratio between receiving water body flow and discharger effluent flow. Also, policy factors such as clarity, simplicity and ease of oversight by public interest groups are important in any regulatory policy.

b) Principles for defining significant lowering of water quality

A principle agreed to by all WQAG members is that the antidegradation demonstration ought to focus on the long-term impact on the environment, not the immediate water column impact. With the development of water quality standards and permit implementation procedures, the immediate water column impact is addressed in the NPDES permit more effectively than the long-term impacts. The antidegradation review ought to be used in a manner that brings special environmental benefit.

A second principle is that choices in this environmental policy should be done to do the most good. Inside that is a discussion about using both the good ideas of the precautionary principle and of economic resource efficiency. The WQAG did not come to a consensus on the precise meaning of those ideas and how they should be applied.

It did, however, agree that IDEM should be given adequate resources to perform all of its water quality protection functions without limitations. It also agreed that this situation did not exist and likely will not for the planning horizon of this policy.

When IDEM is not given an adequate level of resources, choices need to be made on how to maximize the water quality benefits from those limited resources. Antidegradation policy choices, then, are influenced by the allocation of IDEM water protection resources that gives the best water quality. To do this appropriately requires IDEM to have a good sense of the relative water quality benefits it can obtain from its different programs and ways of operating its programs. To that end, the categories of special benefits vis a vis significant lowering were reviewed.

(Both the precautionary principle and the economic resource efficiency principle were discussed in depth as to usefulness in informing the debate. Both are essential but each served to be more divisive than being a common ground for constructive dialog. See Appendix E for further details about the possible use of both a form of the precautionary principle and of economic resource efficiency as principles in this debate. The applicability of each of these is sharply disputed by the stakeholders.)

The WQAG members understand the difficulty under which IDEM OWQ staff work given the resource limitations and the ambiguities of federal and state direction in regulation or written policy and its resulting impact on both the water quality and the regulated community.

c) Options for "Significant Lowering/De Minimis" Thresholds

The WQAG understood that there are two potential approaches to determining what constitutes a "significant lowering of water quality," meeting the designated use or increasing the ambient pollutant concentration in the receiving water.

(1) Meeting The Designated Use

Achievement of the designated use is the ultimate objective to be achieved. The narrative and numeric water quality standards are the measure of achievement. By this reasoning there can be no "lowering" of quality or no "degradation" of the waters caused by any change of a measured parameter as long as the designated use of the water is met as determined by the standards being met.

This is the approach US EPA and some states and tribes use to implement the NPDES program (Kentucky, Arkansas, Puerto Rico, Colville Indian Reservation, and all federally issued storm water associated with industrial activity or construction activity permits). This approach is also consistent with the philosophical approach recommended by the 2001 National Academy of Sciences report "Assessing the TMDL Approach to Water Quality Management" (pp. 22-31).

(2) Increasing The Ambient Pollutant Level In The Receiving Water

"Lowering" or "degradation" of water quality is measured not in comparison to the standard but to the increase from the ambient level of a pollutant in the water column at a particular time caused by an increase in the NPDES permit limit that results in an increase in the discharge of the pollutant. By this reasoning, the change in concentration or load of a particular pollutant is irrelevant to whether the standard is being achieved.

This is the approach required by the federal Great Lakes guidance regulation for the Great Lakes System, but only for bioaccumulative chemicals of concern (BCCs). Indiana opted to apply this to both BCCs and non-BCCs.

d) Discussion of a Threshold Based on Increasing the Ambient Concentration

Without discussing the merits of the two threshold approaches, the following discussion explores the second approach in c) above with the assumption that a pollutant-specific increase in a permit limit is the potential trigger for the antidegradation demonstration. The WQAG members thought that it was appropriate to capture common understandings regarding NPDES permits before fully considering antidegradation policy decisions. WQAG members were informed of the following regarding NPDES permits:

- (1) An NPDES permit limit incorporates certain restrictions on degradation of water quality;
- (2) The effluent limit is driven by the WQBEL or BAT, whichever forces a lower limit;
- (3) The WQBEL is driven by the acute criterion at the end of pipe or the chronic criterion at the edge of the mixing zone, whichever is a lower value. (More precisely, there is use of the final acute value, the use of which differs currently between Great Lakes and rest of state.)

- (4) A WQBEL based on the chronic criterion can incorporate only 1/2 of the Q_{7,10} low flow of the stream (1/4 in the Great Lakes Basin) as a mixing zone.
 - (5) By the recommended WQAG policy [See Appendix B] on the ambient concentration calculation, the ambient concentration is measured mostly at times other than low flow and therefore parameters whose background concentration increases with storm run off (such as total metals) are given tighter permit limits than would be required if the actual measurements of ambient concentration were performed at the low flow.
 - (6) By federal guidelines, the permit compliance limit is set at a monthly average which is below the WLA by a factor depending on the variability of the effluent parameter (for example 70% is a common factor used). A discharger wishing to avoid the consequence of violations must operate below this enforceable limit so they assure themselves that their effluent variability seldom results in exceeding its permit limitations. In other words, the permit limit is set at a lower value than needed to achieve the standard in-stream at low flow assuming there will be a certain percent of discharge above that value and that the net result is an overall discharge rate well within the assumed protective rate (WQBEL).
- e) Options for Setting Ambient Concentration Threshold Using the "Unused Loading Capacity" Term

The WQAG, from the start, considered a policy of assigning the trigger for the antidegradation demonstration to be defined as a percentage of the Unused Loading Capacity (ULC), which is the same approach in the current Indiana Great Lakes System regulation on antidegradation implementation. Therefore, the first step to establish this policy is to have an absolutely clear understanding by all parties as to what is meant by ULC and how is it to be calculated.

The WQAG discussions started with the formula contained in the proposed triennial review rule language dated February 1999. This formula was different than the one contained in the 1997 Indiana Great Lakes rules. The Great Lakes rule calculation for ULC does not include the increase in discharge flow (Q_p in the formula below) in calculating the total loading capacity and thus it is not in the calculation of the ULC.

The subgroup agreed to continue its discussion based on the triennial formula, but to review the implications of this choice vis-a-vis the choice of the Indiana Great Lakes regulation approach. This comparison requires exploration of the policies in this document before it can be done in a manner that is instructive. Also, note that the role of the WQAG is to lay out potential policy choices in a clear manner, not to make policy decisions.

The proposed ULC calculation provided in the formula below has been used as the framework for WQAG discussions. As a result of these discussions, alternative ULC definitions could be developed for consideration. The WQAG exercise regarding the use of this formula was not so much to recommend a particular formula but to make sure all parties understood the policy discussion on how much is too little or too much to trigger antidegradation demonstration.

The unused loading capacity formula used by the WQAG is:

$$ULC = ((Q_s + Q_e + Q_p) * WQC) - (Q_s * C_b) - WLe$$

Where: ULC = Unused Loading Capacity
Q_s = critical stream flow (for aquatic = Q_{7,10})
Q_e = existing discharger flow
Q_p = proposed increased discharge flow
C_b = background concentration upstream
WLe = existing wasteload

("existing wasteload " means either a permitted wasteload for parameters with permit limits or "existing" concentration/loads of the parameter which has no existing permit limit based on permit application information)

The ULC formula is not a description of any specific reality, but a policy construct to achieve a particular purpose for establishing permit conditions. None of the three terms in the formula are aligned precisely in time and space. There are also errors in estimating each. Therefore, decisions like the ones below are not answered by science or mathematics. They are purely policy decisions to be made in the context of the total collection of policy issues that comprise the antidegradation policy.

Nonetheless, the primary issue listed below is a fundamental policy that needs resolution. Confusion about it could lead to fundamental misunderstandings not only of the absolute value of the ULC for antidegradation but also of the values in the next step of comparing a percentage of the ULC to the increase in the permit limit.

To address concerns and different levels of understandings about how ULCs would be calculated and used, a series of questions evolved. These questions are listed below along with relevant discussions

f) Policy Questions About Expression of "Unused Loading Capacity"

- (1) What expression of WLe is the most appropriate for parameters with a permit limit? Is it best expressed as the theoretical WLA that was used to calculate the existing permit limits or is it best expressed as the actual permit limit (the monthly average limit expressed as a mass value) the applicant in fact is currently allowed to discharge?

Without further specification, "permitted wasteload" could mean either the amount in the WQBEL or the amount in the underlying wasteload allocation. The general policy implication of this decision is that the permit limit will be lower than the WLA that served as its original basis for the limit. According to EPA guidance, a safety factor for variability of the effluent is built into the process for setting water quality-based effluent limits (e.g. 70% use for a moderately variable effluent). Therefore, a ULC calculated with the proposed formula using a WLA for the existing discharger will be a smaller value than a ULC calculated using a permit limit that is 70 percent of the WLA.

Philosophically, the idea of ULC is the amount of additional load that could be added to the downstream flow without exceeding the standard in the stream. There are four components to this:

- (a) the amount that the WLA process makes permanently untouchable to a discharger;
- (b) the amount that the conversion from WLA to WQBEL makes untouchable to a discharger;
- (c) the amount that for a particular discharge permit condition (such as BAT or BPT) makes untouchable beyond the WQBEL; and
- (d) the amount that is not prohibited from use by these permit conditions but is not being used.

The argument in favor of using the existing wasteload allocation term for the ULC:

Philosophically, a permittee is still allocated a whole fraction of the entire WLA (1/2 or 1/4) even if for statistical reasons it cannot use the whole fraction. Within the thirty-day averaging period, the value can be exceeded for short-term duration.

The Total Loading Capacity (TLC) term in the ULC formula is presented assuming a **protective** value based on a 4-day exposure for aquatic chronic. The WLe value should use the same 4-day exposure period for the value. Alternatively, both should use the 30-day average. If one is adjusted for the effluent variability, so should be the other.

The argument in favor of the using the actual permit limit term for the ULC:

The WLe should be our best attempt to estimate what is being used now in the receiving water body. The portion of the TLC that is not used should be the TLC less the load due to ambient **concentration** (from all sources) and less the amount the existing discharger is permitted to use. Any amount in the category of being prohibited from use by a permit condition is just as unused as the amount that the wasteload allocation itself prohibits the discharger from using.

This point is made clearest when the restriction on the discharge limit is due to a technology-based requirement. In this case the current limit itself was not based on the WLA, but a more restrictive condition. There will be a large amount of unused loading capacity remaining that could have been used according to the WLA but is restricted. This amount of off-limits unused loading capacity is just as legitimate unused loading capacity as that which the WLA itself declares permanently unavailable for use.

Because the enormous safety factors of allowing only one-half or one-fourth of the receiving flow to count in the concentration calculation, the WQBEL (set at the 99 percentile below the 4-day average) is for all practical purposes the same type of value as the BAT and should be considered in the same manner.

Some parties favoring this approach believe that there are practical concerns that cannot be overlooked. For example, some believe that we cannot convert aquatic 4-day to 30-day and have it be scientifically meaningful without aquatic testing. (Although it would be possible to multiply the TLC by the same factor used to obtain the WQBEL, this has no technical meaning and could be different for different WQBELs, leading to complexities in explanation and in oversight.)

Interested parties also believe there is precedent in the GLI rules to support a permit limit term to be used in the ULC calculation.

- (2) What expression of WLe is the most appropriate for parameters that exist in the discharge but do not have an existing permit limit?

The fundamental principles of issue one apply here as to whether this existing load discharged below levels causing a Reasonable Potential to Exceed should be expressed as the equivalent of the wasteload allocation or as the equivalent of the WQBEL or as the equivalent of the existing effluent quality. That aspect of this policy should be identical.

- (3) Should the proposed new increase in discharge flow be considered when calculating the ULC?

The triennial review proposal of February, 1999 does include the proposed flow. The current Indiana regulation for the Great Lakes Basin does not. Below, for comparison purposes, is the current Indiana procedure for the Great Lakes Basin waters:

In the Great Lakes Basin, an antidegradation demonstration is required if:

- New or increased permit limit is required;
- The calculated in-stream concentration outside the mixing zone increases; and
- Either of the following two conditions apply:

A. Proposed mass increase is greater than or equal to 10 % ULC

where: $ULC = (Q_s + Q_e) * WQC - Q_s * C_b - WLe$

with same definition of terms as formula above; and

where: WLe = monthly average mass in permit, OR

B. After the proposed increase happens, 10% or less of that TLC remains unused

where: the TLC is again $(Q_s + Q_e) * WQC$

- (4) Should a necessary condition for a lowering be that the proposed concentration of the parameter outside the mixing zone be increased? That is the condition in the current Indiana rule for the Great Lakes Basin.

One objective of antidegradation is to affect positively the proposed ambient concentration measured outside a mixing zone. If there is no change to occur, then that could be an indication of no significant lowering of water quality. Having such a condition would provide a positive incentive for a discharger to reduce the proposed discharge increase to below assure this result.

The counter position is that if this is done, it should not apply to BCCs that could bioaccumulate, with the critical measure being load instead of concentration.

- (5) How will permit increases "using up" a part of the existing in-stream ULC be managed?

For the most part, consumption of ULC will happen for the first discharger on a stream using a mixing zone for a chronic aquatic life-based limit. For subsequent limits set with mixing zones, after the increased permit is issued, the remaining unused loading capacity (post-permit change ULC) in the receiving water is identical to the amount of unused

loading capacity in the receiving body before the change in permit (pre-permit change ULC). If the limit is set by a best available treatment technology economically achievable (BAT) or the acute aquatic life standard instead of one using a mixing zone, the post-ULC is greater than the pre-ULC.

g) Policy Questions for Determining a Quantitative Significant Lowering/De Minimis Threshold Value Using the Term "Unused Loading Capacity"

The fundamental policy question to initiate the antidegradation demonstration is what is the amount of increase in mass of a discharger to a stream proposed as a change to an NPDES permit to be considered significant lowering of water quality and therefore to require an antidegradation review? Alternatively stated, at what amount does it make sense to do this review and at what amount is the review redundant or of little potential benefit?

The significant lowering policy decision is made in the context of the social/economic importance test and the necessary to discharge test. One argument raised is that since that WQAG is recommending a reasonable technology evaluation test as well as a reasonable, efficient social/economic test, the state agency and the regulated should not find the antidegradation review a burden and therefore the significant lowering test issue should be more stringent than if the antidegradation demonstration test posed an unreasonable burden. A further argument is that the special evaluation to determine whether the technology options are optimal is one that is good to do for every situation anyway. Always there is a legitimate reason under the law to use discretion about allocating resources for protection based on environmental benefits received.

Three concepts are important:

- (1) There is potentially a great difference in environmental benefit depending on the nature of the parameter. The BCC, the conservative non-BCC and the non-conservative non-BCC, for instance, are three classes of parameters that have different long-term impacts.
 - (2) There is potentially a great difference in environmental benefit depending on the ratio of the discharge effluent flow to the volume of the receiving water. In effluent dominate situations there is little opportunity for reduction benefit compared to stream dominate situations where the potential for benefit is negligible because the WQBEL limit could be large due to a mixing zone.
 - (3) There are categories of activities with a discharge increase that inherently have negligible impact on any situation or have already been evaluated such that it is known that no further study would result in significant environmental benefit.
- h) Threshold Based on Class of Parameter - Should parameters have different thresholds according to the differences in the inherent long-term impact of the parameter?

The WQAG discussed the following policy concepts that could differentiate BCCs and non-BCCs, conservative non-BCCs from nonconservative non-BCCs and parameters with water quality standards from parameters with only tier 2 value estimations.

(1) BCC threshold policy

The consensus favored taking the federal GLI BCC antidegradation guidance and applying it to the waters outside the Great Lakes Basin.

(2) Non-BCC threshold policy

The non-BCCs would have its own policy appropriate to them. They may further be usefully divided between conservative (parameters such as heavy metals that could remain without degradation) and non-conservative (parameters such as ammonia and BOD that dissipate or degrade). Conservative parameters should be addressed in the context of their natural abundance (i.e. what is the natural amount of lead in surface waters due to leaching of soils in their natural state). Another consideration is the difference between limits based on tier two values (such as iron and manganese) which, if taken without study, are intended to exaggerate the actual toxicity and those limits based on water quality standards in the regulation.

- i) Threshold Dependent on Ratio Between Receiving Water and Effluent - Should the ratio of effluent to stream flow be an important factor?

The WQAG recognized that actual "significant lowering of water quality" and the realistic environmental benefit to be gained can depend on the ratio of effluent to receiving waters. The variation of environmental benefit from antidegradation is due entirely to the formula used to calculate the permit limit. When the discharge is high compared to the receiving waters, the limit itself is usually the tightest (chronic) with little or no mixing zone component. When the discharge is low compared to receiving water, the limit is higher due to the mixing zone or, if high enough, capped by the acute aquatic value. There is often greater load for potential reduction in the latter situation.

Three situations can occur: discharge to a zero-flow stream, to a comparatively low-flow situation or to a comparatively high-flow receiving water

(1) For Discharges of Non-BCCs to Zero-Flow Streams

There is no mixing zone because there is no flow at critical flow times. In general, limits are always set at chronic criteria at end of pipe (unless BAT results in a tighter value).

The policy setting for an antidegradation demonstration trigger at a percent of Unused Loading Capacity for zero-flow stream means every increase of existing pollutant discharge or every new chemical needing a limit requires antidegradation review, no matter how slight. This could blindly cross the line for allocating resources to attend to circumstances with negligible environmental benefit possible.

Note that after the initial permit issued on a zero-flow stream, subsequent mass increases based on the same water quality standard will never result in an increase in the concentration in the receiving water. Perhaps the evaluation should be performed on the first secondary (non-zero-flow) stream into which this zero-flow stream discharges.

Note also, that very likely, in most cases the greatest positive or negative impact on a zero-flow stream from an increase in mass of a permittee will be the addition of the flow itself.

And the assessment of whether it is positive or negative could depend on the desired type of aquatic habitat and the characteristics of the rate of discharge. A discharge may be essential for one type of aquatic habitat and destructive of another.

(a) Argument for Excluding Zero-Flow Stream Discharges from Antidegradation Review

Can there be any degradation of a zero-flow stream if the water discharged to it becomes the water of the stream below the chronic standard and has no chronic effects on aquatic life? In fact, this water allows aquatic life.

For non-toxics, the total amount of reductions in load possible from permits for these stringent circumstances would be in grams per day quantities.

(b) Argument against Excluding Zero-Flow Streams from Antidegradation Review

Conservative pollutants such as heavy metals, though discharged into the water column at concentrations posing no toxic effect, may build up in sediments over time. However, for most situations it is unlikely for significant accumulation with modern permits at part per billion metal discharge levels. It is better to review the possibility of further reductions before allowing new discharge.

We note that there is as yet no formal IDEM sediment policy either to guide this decision or to substitute for it. If the public could be expected to subsidize the future dredging of contaminated sediments, perhaps this should be considered in today's public policies.

If argument (b) is chosen, the policy issue remains about what is the size or other characteristic of a proposed effluent that makes the antidegradation review not worth doing.

(2) For Discharges of Non-BCCs to effluent-dominant situation

Situations in which the effluent flow is larger than the receiving water at low flow have the characteristic of using a quarter or half of a comparatively small stream for mixing and thus the permit limit is not much increased due to dilution. Many of these situations resemble a zero-flow stream in degree of environmental benefit possible from any antidegradation review.

Perhaps for these streams (say greater than 1:1 effluent to stream) only situations discharging an amount at a high percent of the unused loading capacity should be considered significant lowering. Perhaps that percent for the antidegradation review could be distinguished between conservative and non-conservative (such as 50% nonconservative/25% conservative).

For non-toxics, the total amount of load possible to reduce for these permits is likely to be in pounds per day quantities.

(3) The non-BCC stream-dominant situation

Situations in which the effluent is smaller than the receiving waters have the characteristic of using only a small part of the stream for mixing once the acute standard becomes limiting and thus above that flow the permit limit is not much increased due to dilution. These situations will obtain maximum benefit of mixing zones with effluent limits at an

end-of-pipe rising until reach the acute criteria or are otherwise BAT-limited. It is these situations that antidegradation review could be most useful, recognizing that the concentration in the WQBEL permit limit decreases with increasing load and effluent flow.

Perhaps for these streams (say less than 1:1 effluent to stream) the trigger for significantly lowering could be discharging conservative parameters (10-15% ULC) and non-conservative (25%ULC).

For non-toxics, the total amount of load possible to reduce in these circumstances could be in hundreds of pounds per day quantities.

(4) discharge of a non-BCC to a lake

Antidegradation for discharges to lakes is a special situation unrelated to the consideration for streams. In general, for lakes there are no mixing zones. In some cases, these systems involve reservoirs for flood control or public water supplies. For a situation in which a mixing zone is permitted to a lake (Lake Michigan), it is allowed only with Commissioner approval.

j) Are there activities whose increased discharge can reasonably be assumed to never cause a "significant lowering of water quality?"

There was general agreement that there are certain activities that should not be considered a "significant lowering of water quality" and that these activities would be specifically listed as not being subject to antidegradation demonstration requirements See Appendix XX for a list of these activities.

While there was agreement on the description of a set of activities, the category of general permit was discussed in depth. There was agreement that a condition operating under a general permit had incorporated in it achievement of antidegradation requirements, if the system at IDEM is functioning appropriately and requires those that do not meet the general permit prerequisites to obtain individual permits. There was disagreement about the reasoning.

(1) Background

This NPDES permit is required of certain industrial dischargers and certain sized construction sites when storm water is discharged from the property to the waters of the United States through a point source conveyance such as a ditch. Parties may obtain an individual NPDES permit for this or may obtain a general permit. The conditions of the general permit are established by regulation. The party wishing to be covered by a general permit submits a notice of intent(NOI) to IDEM. IDEM decides whether circumstances at the site are such that an individual permit is really needed (for instance if permit concentration limits are necessary). If an individual permit is necessary, the discharger must obtain an individual permit. For the general permit, studies must be performed and Best Management Practices (BMPs) must be in place to protect quality of the water, including assurance that it is separated from any process discharge.

A storm water permit is inherently different than a normal discharge permit in that there is no design flow that occurs independent of the weather or flow in the receiving water. It is also different in that the permit is for a potential change in the rate of and circumstance of

storm water flow; prior to the need for the storm water permit storm water from the area still drained into the receiving water body, either more quickly or less quickly or at the same rate.

Note that the current WQAG discussion about the defining the degree of load increase to trigger antidegradation has been focused on unused loading capacity as determined at the point of low flow.

Storm water flow does not typically occur at low flow. Thus, we currently have no conceptual framework for an objective measure of significant lowering for storm water. In most cases, the general permit itself does not accommodate permit concentration or load limits for pollutants.

One factor could be the character of rate of flow and frequency of flow that are changed due to the facility construction.

It is possible that some new storm water permits are needed with no change in nature of storm water discharge at all; the type of business changed slightly to, for instance, assemble wood pieces in the same building with same parking lot as before that did not need a permit. It is equally possible the nature and quality of storm water discharge is improved compared to the discharge prior to the activity that requires the permit.

USEPA guidance in this matter, supported by a Court decision brought by the Natural Resources Defense Council (NRDC), regards storm water permits as short-term-intermittent dischargers with negligible impact at low flow steady-state conditions for the NPDES permit. The Court has agreed that to review each such permit is not required by the Clean Water Act. The Court said that the Clean Water Act anticipates wise use of resources to discriminate between addressing the truly problematic increases with existing legal tools (individual NPDES permit or TMDL) as opposed to addressing each general storm water permit.

In addition to the EPA decision to consider these storm water discharges having negligible impact at low-flow steady-state conditions, EPA believes that general permits have been designated to comply with the technology-based standards of the CWA (BAT/BCT). Based on consideration of the appropriate factors for Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) requirements, and a consideration of factors and options discussed in the original general permit rules, EPA considered controlling storm water discharges associated with industrial activity with tailored requirements for developing and implementing storm water pollution prevention plans, and for selected discharges, effluent limitations sufficient for protecting water quality.

The legal basis of this is as follows: EPA is authorized under 40 CFR 122.44(k)(2) to impose BMPs in lieu of numeric limitations in NPDES permits when the Agency finds numeric limitations to be infeasible. EPA may also impose BMPs which are "reasonably necessary...to carry out the purpose of the Act" under 40 CFR 122.44(k)(3). Both of these standards for imposing BMPs were recognized in *NRDC v. Costle*, 568 F.2d 1369 [D.C. cir. 1977]. The provisions in general permits are proposed under the authority of both of these regulatory provisions.

(2) Two Reasons for General Permit Being in Compliance with Antidegradation

- (a) The activity leading to the requirement for a general storm water permit has not "significantly lowered water quality"

If excessive intermittent discharge pollutants are projected to be or are found to be present in the discharge on a regular basis, the discharger can be required to obtain an individual permit.

- (b) There may be "Significant Lowering" of water quality, but site-specific demonstration is inherent in general permit conditions

The rate and duration of storm water flow at a particular part of the receiving water may change as result of the activity requiring the general storm water permit. A significant enough change could require an individual permit or special general storm water permit like the municipal drainage general permit. Fundamental changes are addressed by TMDL process. However, because the change for the required general storm water permit is unlikely or infrequently going to cause added an pollutant at low flow, it is therefore is minimal for the purpose of requiring an economic or social evaluation or for the purpose of requiring a BMP evaluation to reduce pollutant load.

By regulation, we establish that all activities accommodate important economic or social development in the area and state that the BMP technologies of the general storm water permit regulation are adequate protection.

3. Conclusions

The WQAG noted that State rules prevent an NPDES permit limit to cause the receiving water quality itself to exceed the water quality standards. Also, there are a number of conservatisms in the permit process to make the actual discharges lower than even that. Thus the WQAG found that this policy should address long-term environmental impacts, not short-term impacts.

The WQAG found three options for the commissioner to consider as its policy outside the Great Lakes Basin.

- a) The option supported by the environmentalist community is that any permit limit increase by definition lowers the water quality. That community is not confident that we know enough about the impact of constituents on water quality to be certain that the standards themselves are protective and, even were that the case, any increase is an incremental step towards less protection. It argues that a precautionary principle should be used when such uncertainty exists.²
- b) The option favored by the regulated community is that any discharger operating under an NPDES permit program will by definition always discharge in a manner that will not lower water quality and hence should not require a special antidegradation demonstration. The reasoning is that the state water quality standard is the measure of achievement of the

² The environmentalist definition of the Precautionary Principle used here is from the Wingspread Conference: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken, even if some cause and effect relationships are not fully established scientifically."

designated use for the water. When the standard in the receiving water is met, the quality is always high. No incremental changes in concentration that happen below the "no-harm" concentration affect the quality of the water. The antidegradation policy was developed for situations with no NPDES permits and no state standards.

- c) The option that is a middle position is one that acknowledges that a type of lowering of water quality is possible even as the water body concentration standards are met. However, any reasonable impact anticipated can vary from negligible to significant and it is only that which is significant that the state should focus on. In determining "significance" there is a "de minimis" increase below which the impact should be considered insignificant. The regulation should establish a threshold increase in a permit limit to trigger the antidegradation demonstration that would vary depending on parameter and circumstance. That threshold should be expressed as a percentage of the unused loading capacity present at the time the proposed discharge would occur.

The threshold for Bioaccumulating Chemicals of Concern (BCCs) should be zero. For non-BCCs, the magnitude of the threshold should depend on situational factors. One factor is whether the parameter remains in the environment a long time or is quickly volatilized or degraded. Another factor is whether the flow of the discharge is very big or very little compared to the water body it is going into. A third factor is whether the standard is a criterion established by rule with adequate toxicological information or whether it is a Tier 2 value, as was proposed for manganese and iron, and is not considered toxic, but ends up with artificially strict standards because of the Tier 2 methodology when there is incomplete toxicity data.

At the other extreme, there should be a class of discharges that, because of the nature of the discharge, should be considered by rule never to cause a significant lowering of water quality for the purpose of this policy. This would be a list of named activities that the state is confident this applies to, such as, general NPDES permits which have uniform conditions for uniform situations.

Antidegradation - ACTIONS THAT DO NOT CONSTITUTE SIGNIFICANT LOWERING

327 IAC 5-2-11.3	WQAG Recommendations
-------------------------	----------------------

D. Actions That Do Not Constitute Significant Lowering

The following table contains the existing rule language from 327 IAC 5-2-11.3 that contains actions that do not constitute a significant lowering of water quality. The second column contains an explanation of the WQAG recommended rule revisions.

(C) Notwithstanding clauses (A) and (B), the following do not constitute a significant lowering of water quality:	
(i) Changes in loadings of any substance within the existing capacity and processes, and that are covered by the existing applicable permit. These changes include, but are not limited to, the following:	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(AA) Normal operational variability, including, but not limited to, intermittent increased discharges due to wet-weather conditions.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(BB) Changes in intake water pollutants not caused by the discharger.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(CC) Increasing the production hours of the facility, for example, adding a second shift.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(DD) Increasing the rate of production.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(ii) New limits for an existing permitted discharger that are not a result of changes in pollutant loading, and will not allow an increase in pollutant loading, including new limits that are a result of the following:	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(AA) New or improved monitoring data.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(BB) New or improved analytical methods.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(CC) New or modified water quality criteria or values.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(DD) New or modified effluent limitations guidelines, pretreatment standards, or control requirements for POTWs.	Retain in the rule as an action that does not constitute a significant lowering of water quality.

Antidegradation - ACTIONS THAT DO NOT CONSTITUTE SIGNIFICANT LOWERING

327 IAC 5-2-11.3	WQAG Recommendations
(iii) The following actions:	
(AA) Short term, temporary (weeks or months) lowering of water quality.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(BB) Bypasses that are not prohibited at 40 CFR 122.41(m) or section 8(11) of this rule.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(CC) New or increased discharges of a pollutant, when the facility withdraws intake water containing the pollutant from the same body of water, and the new or increased discharge of the pollutant is due solely to the presence of the pollutant in the intake.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(DD) New or increased discharges of a pollutant that is not a BCC, where there is a contemporaneous enforceable decrease in the actual loading of the pollutant from sources contributing to the same body of water such that there is no net increase in the loading of the pollutant to the same body of water.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(EE) New or increased discharges of a pollutant or pollutant parameter due to response actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (as defined in IC 13-11-2-24), as amended, corrective actions pursuant to the Resource Conservation and Recovery Act (RCRA), as amended, or similar federal or state authorities, undertaken to alleviate a release into the environment of hazardous substances, pollutants, or contaminants that may pose an imminent and substantial danger to public health or welfare.	<p>For new or increased discharges, this does not constitute a significant lowering of water quality.</p> <p>For RCRA/CERCLA corrective actions that are expected to operate longer than 12 months, the antidegradation demonstration rules should be revised to allow a reduced antidegradation demonstration. For example, because the need for a remediation exists, the facility would not be required to submit an economic or social test. The demonstration would only require a showing that the treatment technology the facility intends to install and operate would be the best available and the most affordable. In addition, all appropriate public participation requirements would be required.</p>

Antidegradation - ACTIONS THAT DO NOT CONSTITUTE SIGNIFICANT LOWERING

327 IAC 5-2-11.3	WQAG Recommendations
(FF) New or increased discharges of a pollutant or pollutant parameter due to increasing the sewered area, connection of new sewers and customers, or acceptance of trucked-in wastes (such as septage and holding tank wastes) by a POTW, provided that the increase is within the design flow of the facility, there is no increased loading of BCCs from non-domestic wastes, and no significant change is expected in the characteristics of the wastewater discharged.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(GG) Increased discharges of a pollutant due to implementation of department-approved industrial or municipal controls on wet-weather flows, including combined sewer overflows and industrial storm water, when there is no net increase in the loading of the pollutant to the same body of water.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(HH) New or increased discharges of non-contact cooling water that will not increase the temperature of the receiving waterbody outside of the designated mixing zone, where applicable and will not require numeric WQBELs for toxic substances or WET as determined under section 11.5 of this rule.	Retain in the rule as an action that does not constitute a significant lowering of water quality.
(II) Discharges of storm water subject to a general permit under 327 IAC 15-5 (storm water run-off associated with construction activity) and 327 IAC 15-6 (storm water run-off associated with industrial activity).	<p>For new dischargers seeking coverage under Rule 5, retain in the rule as an action that does not constitute a significant lowering of water quality.</p> <p>For new dischargers seeking coverage under Rule 6, retain in the rule as an action that does not constitute a significant lowering of water quality, but only under the following recommended rule revision. The rule should be revised to require the new discharger to submit with the Notice of Intent letter a copy of a Storm Water Pollution Prevention Plan (SWPPP) for OWQ staff to review.</p>

Antidegradation - ACTIONS THAT DO NOT CONSTITUTE SIGNIFICANT LOWERING

327 IAC 5-2-11.3	WQAG Recommendations
<p>(JJ) An action that will result in a new or increased discharge of a pollutant or pollutant parameter that is not a BCC, if the new or increased discharge is necessary to accomplish a reduction in the discharge of another pollutant or pollutant parameter and the commissioner determines the action will result in a net improvement in water quality in the waterbody. The commissioner may approve such an action only if:</p> <ul style="list-style-type: none"> (aa) the reduction in the discharge of the reduced pollutant exceeds the increase in the discharge of the new or increased pollutant; (bb) the new or increased pollutant is determined to be significantly less bioaccumulative and toxic than the decreased pollutant; and (cc) the applicant demonstrates that all reasonable and cost-effective methods for avoiding the new or increased discharge have been taken. 	<p>Retain in the rule as an action that does not constitute a significant lowering of water quality.</p>
<p>(KK) An action that will result in a new or increased discharge of a pollutant or pollutant parameter that is not a BCC, if the new or increased discharge is necessary to accomplish a reduction in the release of an air pollutant and the commissioner determines the action will result in a net environmental improvement. The commissioner may approve such an action only if:</p> <ul style="list-style-type: none"> (aa) the reduction in the discharge of the air pollutant is necessary to meet a state or federal air quality standard or will substantially reduce human exposure to hazardous air pollutants; (bb) the reduction in the mass of air pollutant discharged represents a substantial reduction in the total mass released by the applicant; and (cc) the applicant demonstrates that all reasonable and cost-effective methods for avoiding the new or increased discharge to the waterbody have been taken. 	<p>Retain in the rule as an action that does not constitute a significant lowering of water quality.</p>
<p>(LL) At the commissioner's discretion, new or increased discharges of a substance used to treat zebra mussels in an intake water pipe or structure.</p>	<p>Retain in the rule as an action that does not constitute a significant lowering of water quality except that the rule should be revised as follows: At the commissioner's discretion, new or increased discharges of a substance used to treat nuisance macroinvertebrates that threaten the integrity of pipes, structures or equipment that carries intake water.</p>

Antidegradation - ACTIONS THAT DO NOT CONSTITUTE SIGNIFICANT LOWERING

327 IAC 5-2-11.3	WQAG Recommendations
-------------------------	----------------------

Discharges subject to general permits:	
15-7 Point source discharges associated with coal mining, coal processing and reclamation activities	<p>For existing permittees, retain in the rule as an action that does not constitute a significant lowering of water quality.</p> <p>For new dischargers, retain in the rule as an action that does not constitute a significant lowering of water quality, but only under the following recommended rule revision. This rule should be revised as follows: To be eligible for coverage under this general permit, new facilities must include in the Notice of Intent letter an identification of sources of storm water or pollutants other than those covered by the general permit, if applicable.</p>
15-8 Once through non-contact cooling water (not applicable to steam electric power generation)	<p>For existing permittees, retain in the rule as an action that does not constitute a significant lowering of water quality.</p> <p>For new dischargers, retain in the rule as an action that does not constitute a significant lowering of water quality, but only under the following recommended rule revision. This rule should be revised as follows: To be eligible for coverage under this general permit, new facilities must include in the Notice of Intent letter an identification of the source of the water being discharged.</p>

Antidegradation - ACTIONS THAT DO NOT CONSTITUTE SIGNIFICANT LOWERING

327 IAC 5-2-11.3	WQAG Recommendations
15-9 Discharges associated with petroleum products terminals	<p>For existing permittees, retain in the rule as an action that does not constitute a significant lowering of water quality.</p> <p>For new dischargers, retain in the rule as an action that does not constitute a significant lowering of water quality, but only under the following recommended rule revision. This rule should be revised as follows: To be eligible for coverage under this general permit, new facilities must include in the Notice of Intent letter a copy of their SPCC plan.</p>
15-10 Treated wastewater from a ground water petroleum remediation system	<p>For existing permittees, retain in the rule as an action that does not constitute a significant lowering of water quality.</p> <p>For new dischargers, retain in the rule as an action that does not constitute a significant lowering of water quality, but only under the following recommended rule revision. This rule should be revised as follows: To be eligible for coverage under this general permit, new facilities must include in the Notice of Intent letter an identification of the type of petroleum that has contaminated the ground water.</p>

Antidegradation - ACTIONS THAT DO NOT CONSTITUTE SIGNIFICANT LOWERING

327 IAC 5-2-11.3	WQAG Recommendations
15-11 Hydrostatic testing of commercial pipelines	<p>To be eligible for coverage under this general permit, a new discharger must include in the Notice of Intent letter an identification of the source of the water being discharged.</p> <p>For new dischargers, retain in the rule as an action that does not constitute a significant lowering of water quality, but only under the following recommended rule revision. This rule should be revised as follows: For pipes or tanks that have carried a product, to be eligible for coverage under this general permit, the discharger must include in their NOI letter an identification of the source of the water being discharged and an identification of the product or products that have been transported in the pipes or stored in the tanks.</p>
15-12 Discharges associated with sand, gravel, dimension stone or crushed stone operations.	<p>For existing permittees, retain in the rule as an action that does not constitute a significant lowering of water quality.</p> <p>For new dischargers, retain in the rule as an action that does not constitute a significant lowering of water quality, but only under the following recommended rule revision. This rule should be revised as follows: To be eligible for coverage under this general permit, new facilities must include in the Notice of Intent letter an identification of sources of storm water or pollutants other than those covered by the general permit, if applicable.</p>

E. When is a proposed significant lowering of water quality necessary from a technical perspective?

1. Issue

If a proposed increase in a discharge limit is determined to significantly lower water quality, two antidegradation demonstrations are to be made sequentially. The first is the demonstration that the discharge increase is necessary, from a technical perspective. The second is that the increase in a discharge will accommodate important economic or social development in the area of the discharge. This second demonstration is discussed in section E below.

The state is to establish a policy about what “necessary” means and how to measure it. While there is no specific federal guidance on this, there is general federal guidance about how to review for better control technologies, about whether the chemical use in the process could be changed to a positive effect or whether the wastewater discharge itself could be discharged someplace else.

2. Discussion of the policy to define when a discharge is necessary for purposes of antidegradation

a) Principles of Decision for the First of Two Antidegradation Demonstration Determinations

According to the Supplemental Information for the SID for the Great Lakes Initiative (page 206), the “necessary” to lower water quality decision in the WQAG-proposed scheme occurs as the first decision after it is determined that a new or increased discharge will significantly lower the water quality. At the point this decision is affirmative, then the decision is to be made about accommodating important economic or social development in the area. This is a decision about technology considering existing treatment, pollution prevention and additional treatment.

The WQAG believed that the overarching principle for the “necessary” test is that every new or increased discharge proposed in a permit to significantly lower water quality should be investigated whether it is possible to reduce the amount of pollutant load in the discharge beyond that amount, and that public should be informed of options.

The WQAG decided that a process that would be predictable in advance to all parties and would be open to public involvement was the goal. The WQAG saw it desirable to limit the subjective judgment of the permit writer in the process, especially in decision processes that forced the agency to decide about the ability of a single facility to “afford” a measure. Pollution prevention consideration should be required but actual pollution prevention action should not be mandated by the government.

b) Choices for a Policy and Process

The regulated community and the environmentalist communities each had a strong preference for quite opposite approaches. Below are the arguments the WQAG heard for and against these plus the arguments around a third approach capturing some of the main points of each.

- (1) No further analysis is needed once the permit condition is assigned with effluent limits set at Best Available Treatment Technology Economically Achievable (BAT) or better by the permit process.

Parties in favor of this option argue that despite the significant lowering legal decision, there is no harm at permit conditions, by definition and that BAT is a complex, technical decision which can be accomplished fairly only at a federal level.

Parties in opposition argue that this option would not meet the implications of the regulation to investigate whether the discharger could do better than required by the permit condition. They believe some federal BAT standards are long out-of-date; that the discharger should investigate if there are less expensive, more effective technologies available.

- (2) Set Criteria for "Necessary" on a Case-by-Case Depending on Ability of Facility, Company or Corporation to Pay.

Parties in favor of this option argue that the expectation is that all dischargers do as well as they can should be enforced with rigorous government and public oversight for all increases. IDEM staff know what WQBELs tighter than BAT have been issued.

Parties in opposition of this option argue that it would be time-consuming for agency staff to do an in-depth analysis of every single increase that triggers de minimis/significant lowering threshold with dischargers and remonstrators both making their cases against a subjective end-point which would be inconsistently applied depending on IDEM staff and politics of situation. Transferability of technology among discharge situations is often not straightforward.

- (3) Third Option Based on WQAG Principles and Extensive Discussion of Options One and Two

- (a) Use the current industry BAT, if the limit was reaffirmed in the most recent biennial 304(m) review.
- (b) If EPA is reviewing the BAT for the industry, use current BAT until EPA has promulgated a change. Facilities with new or increased discharge should use the change immediately upon promulgation.
- (c) If there is no BAT for the parameter, but there is one for the process that reduces the concentration of the parameter (e.g. the BAT is for copper but also reduces zinc; for benzene and also reduces xylene), follow decision of A and B.
- (d) If there is no BAT for industry that is related to the parameter, a table of technologies for each industry should be established that considers: applicability to discharge, effectiveness, operational and capital cost, cost-effectiveness per pound pollutant removed, and collateral environmental harm/benefit. The cost-effectiveness threshold would be based on up to x\$ per pound is expected to do above x\$ per pound expected not to do AND establish thresholds of affordability

c) WQAG Observations about the Policy Consideration

The WQAG seriously considered the option of having IDEM staff use BAT unless US EPA staff believe economically achievable alternative technologies are available since the last US EPA BAT determination was considered. If so, IDEM would review the applicability compared to nationwide industry applicability criteria. This was rejected for two reasons: 1) the task itself is far beyond IDEM capabilities, considering the enormous resources devoted at the federal level to the process; and 2) the discharger could be placed in the awkward position of being required to make a major wasted investment in treatment costs if IDEM guesses incorrectly at what EPA will do.

The WQAG believed that a report describing considerations for reducing a discharge could provide good public information to get better technologies installed or more pollution prevention use. At a WQAG meeting, the concept using the North Carolina Engineering Alternative Analysis to capture other alternatives besides control technologies, such as pollution prevention or disposal existing sewers to public-owned treatment works (POTWs) was discussed.

The WQAG noted that the above "necessary" test might not be appropriate or applicable to POTWs. The POTW "necessary" test may need to be different.

The WQAG believed that in all cases that IDEM must document the reasoning for its decision in writing.

Currently, there is very little US EPA guidance on this issue. Page 206 of the "Supplemental Information Document" (SID) for the Great Lakes indicates that the antidegradation test should be a sequential test where the significance of water quality should be shown to be necessary before requiring an economic or social importance test be performed. The SID also indicates that existing treatment, pollution prevention and additional factors should be considered when considering whether a discharge is "necessary."

IDEM needs to consider whether further analysis is needed once a permit condition is assigned with effluent limits set at Best Available Treatment Technology Economically Achievable (BAT) or better by the permit process.

3. Conclusion

a) The WQAG found three options for the commissioner to consider.

- (1) The option favored by the environmental advocates is that each situation be evaluated individually. The state has experience with different dischargers in different settings and knows that some dischargers may be able to do better because a discharger in a similar situation did so. This is a site-specific decision by IDEM based on the information submitted, public input and national data search.
- (2) The option favored by the regulated is that no further state demonstration is necessary if the permit complies with either the Best Available Technology Economically Feasible (BAT), as determined by EPA, or the state's water quality-based effluent limits (WQBELs), whichever is more stringent. That defines what the federal government considers the "best" technology or, if meeting a WQBEL is necessary, the

technology that can treat wastewater better. Just because one company can use a technology to great effect in no way means that that technology can be used to the same effect by another company. A BAT judgment requires enormous federal resources.

- (3) The option that is a middle position would require all applicants to submit a written feasibility evaluation of control technologies, pollution prevention and alternative disposal. This would be available for public review.
- b) Under position (3), the IDEM formal decision-making criteria would then be divided into four categories for industrial discharge. It is recognized that some BAT may be out-of-date but that for the state itself to make a BAT-type decision assessing national feasibility in an industry would be prohibitively resource-intensive and take too much time per permit application.
 - (1) An industry under a federal effluent guideline with a BAT affirmed in the most recent federal review will be assumed to be using the best control technology for that industry (or better with a water quality-based effluent limit).
 - (2) If EPA is reviewing the BAT, the state should allow the existing BAT to stand but new permits use new BAT immediately on promulgation.
 - (3) If there is no direct industry BAT for the parameter but there is a BAT which IDEM considers to have the equivalent control of the parameter, that is to be used.
 - (4) If there is no BAT affirmed by EPA or under review by EPA, the state decides whether the discharge is necessary by an independent determination. The regulation should require IDEM to prepare for public review tables of control technologies appropriate to each industry for the applicant to evaluate. It should establish range of cost-effectiveness above which it is always too high and below which is always acceptable. It should establish a threshold of net increased costs. It should establish guidelines for affordability.

There should also be a special category for consideration for when and what should be the character of a "necessary" demonstration for a POTW.

There should be a special category for commercial and residential developments with NPDES discharges.

F. Economic/Social Development Test - When does a significant lowering of water quality accommodate important economic or social development in the area?

1. Issue

After a proposed change in discharge is determined to be significant and after the agency has determined that as much as possible technologically has been done to reduce the impact, the second and final part of the antidegradation demonstration is the determination that the activity causing the increase "accommodates important economic or social development in the area."

There is federal guidance about the type of information that might be used as evidence in such a determination, but there is no guidance about how to evaluate whether the information proves that the activity does meet the test. It is left to each state to determine who decides whether the activity accommodates economic or social development and what should be the factors in their judgment.

2. Discussion

a) The Regulation Being Implemented

The federal regulation that is to be implemented in state regulation and policy is brief and ambiguous. Below is the federal regulation together with the current state regulations corresponding to it for outside the Great Lakes Basin and inside it and the latest IDEM proposal (February 1999) for revision for waters outside the Basin. Social/economic test is in bold.

(1) Federal Antidegradation

40 CFR 131.12(b) "Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's planning process, that **allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located**. In allowing such degradation, the State shall assure water quality adequate to protect existing uses fully."

(2) State of Indiana regulations

(a) Current Inside the Great Lakes Basin

327 IAC 2-1.5-4 "(a) For all surface waters of the state within the Great /lakes system, existing instream water uses and the level of water quality necessary to protect existing uses shall be maintained and protected. Where designated uses of the waterbody are impaired, there shall be no lowering of the water quality with respect to the pollutant or pollutants that are causing the impairment.

"(b) Any surface water of the state within the Great Lakes system whose existing quality for any parameter exceeds the criteria established within this rule shall be considered high quality for that parameter consistent with the definition of high quality water found in this rule; and that quality shall be maintained and protected unless the commissioner finds, after full satisfaction of intergovernmental coordination and public participation provisions under 327 IAC 5-2-11.3, that allowing lower quality is necessary **and accommodates [sic] important economic or social development in the area in which the waters are located**. In allowing such degradation, the commissioner shall assure water quality adequate to protect existing uses fully. Further, the commissioner shall assure that there shall be

achieved the highest statutory and regulatory requirements for all new and existing point sources and all-cost effective and reasonable best management practices for nonpoint source control. The commissioner shall utilize the antidegradation implementation procedures under 327 IAC 5-2-11.3 in determining if a significant lowering of water quality will be allowed. "

(b) Current Outside the Great Lakes Basin

327 IAC 2-1-2 (1) " For all waters of the state, existing beneficial uses shall be maintained and protected. No degradation of water quality shall be permitted which would interfere with or become injurious to existing and potential uses.

"(2) All waters whose existing quality exceeds the standards established herein as of February 17, 1977, shall be maintained in their present high quality unless and until it is affirmatively demonstrated to the commissioner that **limited degradation of such waters is justifiable on the basis of necessary economic or social factors** and will not interfere with or become injurious to any beneficial uses made of, or presently possible, in such waters. In making a final determination under this subdivision, the commissioner shall give appropriate consideration to public participation and intergovernmental coordination."

(3) IDEM Triennial Proposal

327 IAC 2-1-2 (b) "The Tier 2 antidegradation standard for high quality waters (HQW's) is as follows:

- "(1) The surface waters of the state whose existing quality for any parameter is better than the water quality criteria for that parameter established in section 6.1 of this rule shall be considered high quality for that parameter consistent with the definition of high quality waters.
- "(2) This high quality of water shall be maintained and protected unless the commissioner finds, after full satisfaction of intergovernmental coordination and public participation of Indiana's continuing planning process and the provisions in section 2.4 of this rule that allowing a significant lowering of water quality is necessary **and accommodates important economic or social development in the area in which the surface waters are located**. In allowing a significant lowering of water quality, the commissioner shall assure:
 - (A) water quality adequate to fully protect designated uses; and
 - (B) that there be achieved the highest statutory and regulatory requirements for all new and existing point sources and, where authority exists, all cost-effective and reasonable best management practices for nonpoint source control."

b) Principles for Decision About a Wise Economic/Social Policy

The fundamental policy issue is summarized in several questions: What does it mean to accommodate "important" economic or social development in an "area?" What is the type of information to be considered? What are the decision criteria of how to evaluate the information to make a decision? Who should decide whether the criteria are met?

While crafting a decision making process to address that policy question, three principles were regarded as vital:

- (1) the decision making process itself should be streamlined with no unproductive delays,
- (2) the decision making process should account for the General Assembly's desire to have most important social and economic decisions in an area be made by parties in that area (i.e. be consistent with Indiana's Home Rule Policy IC 36-1-3), and
- (3) the decision making process should ensure effective public input from all citizens, including those who may have interests different than parties in a local area.

As the WQAG refined its ideas about this policy, five more detailed principles were stated.

- (1) Where possible, local area decision making processes should be used to determine importance for social and economic development in the area. For instance, zoning board change or tax abatement requests are two local processes that apply in some circumstances. State processes that use local decision making such as IURC and IDNR mining permits are the equivalent. The applicant should have discretion to request IDEM public meeting process instead of using an existing process.
- (2) Redundant decision making processes on the same aspect (importance socially and economically to the area) of the same issue should be avoided. The single process should be made as effective as possible for citizens, public interest groups and the applicant. If another state agency is making the equivalent social/economic importance decision with appropriate opportunity for public input, that decision should be used.
- (3) Local citizens should be educated about the nature of the proposed change in activity or new activity both with respect to accommodating important social and economic development in the area and with respect to the environmental change in the receiving water. This could take the form of a simple, standard form to be used in all situations with clear explanations.
- (4) Where no local government approval is required for an existing activity as it changes its discharge, that activity should be presumed by IDEM to be important for social and economic development in the area. Any change in discharge, unless it is related to a change in the nature of the business or unanticipated major change in size of operations, shall be considered important to the area.
- (5) If there is no local government or other state agency making the appropriate decision for the local area, IDEM will make the decision itself for the area using information on the potential social/economic importance to the area by the applicant and advice solicited from informed citizens and public interest groups.

c) Three Choices for a Economic/Social Policy

The most straightforward approach to this policy was unsuccessful, namely to write out a set of decision making criteria that IDEM staff could use universally to evaluate a set of information provided by the regulated and citizens. The WQAG was unable to describe the

characteristics of a type of activity or a type situation of discharge that was always to be considered not to accommodate or always considered to accommodate important economic or social development in the area. After much discussion, the WQAG could not even present examples of such clear-cut situations.

Even the common information indicators such as "more jobs" or "more tax revenues" were flawed because an extremely important change could result in less jobs and less tax revenues. The applicant merely had to argue that the discharge was a part of maintaining a viable function and the IDEM staff would be in an impossible position of second-guessing whether that assertion was correct.

Therefore, the WQAG explored three approaches:

- (1) a particular industry or category of activity/situation is declared by the Water Pollution Control Board (by regulation) or by the General Assembly (by state law) "to accommodate important economic or social development in an area" no matter where or what other conditions exist;
- (2) IDEM uses its judgment to decide (ultimate responsibility) OR
- (3) the local government in the area makes a formal determination after appropriate public notice; IDEM can override this determination only with good cause (this could either be the mandatory first step for non-excluded industry or it could be an optional first step for non-excluded industry).

Approach one is established by proponents of a particular activity or industry convincing the Water Board or the General Assembly and then USEPA that the activity or industry is deserving of such consideration. It could be that for a particular industry and circumstance, one condition of applicability is evidence of a set of specified public meetings or announcements, with an opportunity for public hearing. (What type of development is always important socially or economically to any area of the state? This is the inverse of the question that WQAG has no answer to yet: "what are the characteristics of development that inherently do not accommodate important economic or social development?")

Track Two is where the buck stops for all decisions (IDEM), unless the Board or General Assembly has already decided in manner compelling to USEPA.

Track Three is a means of having the local government have the primary say what accommodates important economic or social development when it desires to have that say.

Arguments were made by the regulated for Track One approach. In fact, one argument was that be virtue of the activity being a legal activity, the economic or social importance in an area was considered already decided positively by the State of Indiana. Since it is the state that needs to make this determination, and Indiana already had for all legal activities, IDEM itself had no additional role.

Arguments were made by the environmentalists for Track Two approach. They preferred regular hearings for each situations organized by IDEM in the locality but in a manner allowing timely and effective input from public interest representatives from outside the area.

The WQAG explored neither the option that IDEM needed to do nothing nor the option that IDEM had to make site-specific decisions with hearings for each case. The first it did not explore because it believed that until now the General Assembly and the Water Pollution Control Board preferred IDEM to have authority to judge whether the Clean Water Act was being implemented appropriately in all situations and to allow for public comment as appropriate. The second it did not explore because to have IDEM review every situation in detail for a decision outside its expertise (economic or social development important in an area) would serve little environmental protection benefit compared to the resources expended compared to benefits derived from IDEM areas of expertise such as the making the permit conditions themselves protective and doing a technology review for practical reductions of the discharge.

d) The Third Economic/Social Approach

The third approach is the one the WQAG developed as an option. In this the local government is given the first opportunity to advise on the economic or social development importance. That keeps close to home the decisions about economic or social importance in an area, meeting directly one of the WQAG principles for this policy. If that government wishes to advise, it must hold a public hearing with specific public information requirements. The local decision is transmitted by the applicant to IDEM. IDEM should accord the local government opinion great weight, but IDEM always has final say. There may be circumstances in which the opinion on importance to area is to a multi-county or statewide interest. While allowing local government an opportunity to be the IDEM default position on the economic or social test question, IDEM accepts public comment on that default position (or on a changed IDEM judgment) from others during the notice of the draft permit.

If the local government is unable or unwilling to do this or if the regulated chooses not to use the local government, then the decision is made by IDEM Assistant Commissioner for Office of Water Quality according to regular public involvement procedures including opportunity for a local meeting.

A challenge in this approach is the standing of parties down stream from the activity who are not in the same jurisdiction of the local government and the standing of parties who for one reason or another are otherwise disenfranchised in practice from the local government decision process.

The WQAG refined this into three paths to resolve whether a significant lowering of water quality contributes to important economic or social development so that the IDEM can issue a draft permit for public comment. See Chart J, pg 54 for a schematic of the decision process.

(1) Presumption by IDEM that Existing Activities Accommodate Important Economic or Social Development in the Area

The presumption of IDEM is that any existing operation continues to accommodate economic or social development in the area; there is no special IDEM hearing on this; all parties may comment on the validity of that default assumption during the regular draft permit review process. The single situation for the automatic presumption of importance is the Existing Operation proposing an Increase in a Discharge Parameter causing a significant lowering of water quality where the change of activity requiring

the permit change does not require a local government decision at the level of the chief executive or legislative body (or decision by another regulatory body such as IDNR or IURC); an example is a change of process that only involves parameter change or change in flow.

(2) Use Results of Regular Local Land Use Decision Process if it has Included Information About Proposed Environmental Change

This includes activities requiring a local approval process (such as a rezoning or TIFF decision) and includes those local processes held by other state agencies such as IDNR for coal mining and IURC for regulated utility activities. For this situation, the presumption is that normal local decision process (or other state regulatory process involving the locals), informed by access to information about the nature of the activity and a description of the environmental change in the water body, is an appropriate body and adequate to make the Indiana decision on accommodating important economic or social development in the area; all parties may comment on the validity of that judgment during the regular draft permit review process. For situations not required by points a. or b., the permit applicant has the OPTION of using this local process or of requesting IDEM to hold a local hearing according procedures of point three.

(3) Decision by IDEM Office of Water Quality Assistant Commissioner after IDEM-led Local Hearing

IDEM makes a special decision through normal, legally set decision-making protocols with local involvement; all parties may comment on the validity of that judgment during the regular draft permit review process. The situation for the automatic use of the IDEM-led Local Hearing is when there is no local government process available and the activity was not an existing operation with a discharge permit. The situation for optional use of this process is when the applicant requests it.

e) The Public Information Sheet About Proposed Accommodation of Economic or Social Benefits and of Proposed Environmental Changes

A key component of the decision process for either the local process or the IDEM Assistant Commissioner process is that the public has access to an understandable, brief description of both the how the activity accommodates important economic or social benefit in the area and how the activity will cause an environmental change.

The WQAG anticipates this to be a standard, simple, short form. The IDEM role is not to judge the quality of the information but rather that the information is present and that it was shared in order that the public that were interested had access to it prior to the decision.

The WQAG principle statement on this is: The applicant requesting a decision by a local decision making body or before IDEM Assistant Commissioner should prepare a short, written information sheet to explain to the local parties the nature of the operations, how it accommodates important social and economic development in the area and what environmental change could happen in the receiving surface waters. The applicant is encouraged to provide this information in as simple and as understandable manner as possible.

However, for those existing operation applicants for permit change that triggers significant lowering and that, according to land use law reasons, need a local municipal or county approval via zoning or planning commission process, the presumption of importance to the area will be dependent on approval by that body, with the requirement that the body be informed of the environmental changes proposed.

Whether the above assumptions are good policy depends on the amount and nature of the information considered being adequate. If it is too detailed or if it is left to the discretion of IDEM staff, there could be too much uncertainty for regulated parties to be able to function. If it is too technical, that could make it unusable as communication device to the public. It should be simple, clear to the lay audience and straightforward to assemble with readily available information.

On the following page is an example of the contents of such a form.

Information Sheet About Social and Economic Importance and Potential Change to Surface Water

This Information Sheet is to be prepared by applicant requesting a local land use decision to inform the locals of the nature of the business and the potential environmental change in the surface water.

1. Basic description of facility and how it accommodates important social and economic development in the area. E.g.:

- a. # of jobs, both direct and indirect wages
- b. level of local unemployment
- c. \$\$ of investment
- d. tax benefits
- e. impact of the new development on existing industry
- f. funding received by State agencies

OR the list of information categories from current Indiana Great Lakes Basin rule

2. A mechanism for local people to contact corporate representatives or others in the local community familiar with the corporate plan.

3. Description of corporate commitment to environmental compliance

4. Description of potential environmental change to the surface waters.

- a) Maximum possible change in amount and variability of flow – how will the stream behave differently?
- b) Maximum possible load increase of permitted parameters compared to existing load
- c) Maximum possible change in concentration in receiving waters of permitted parameters at stream design flow and at median flow.
- d) Simple description of WLA, WQBEL, Technology Limit and Antidegradation

It is anticipated this information sheet would not be comprehensive but rather be short, simple and understandable to the general public.

f) Additional Considerations on Economic/Social

(1) IDEM staff are poorly equipped to assess the wisdom of a company's business plan or its financial assessment or to second guess the changing sensibilities of a local government's land use philosophy. Nonetheless if IDEM must make a decision directly in these matters, it should establish written principles of how it will make its Assistant Commissioner decision including principles such as:

- (a) whether there is a there is a predicted net improvement of a deficient quality of life in the area or maintenance of satisfactory quality of life.
- (b) whether the negative aspects and positive aspects on social and economic well-being are allocated fairly among different jurisdictions or different peoples in the area.

- (c) whether both the short-term and the long-term negative aspects and positive aspects to social and economic status have been considered.
 - (d) whether the activity has special land use attributes, positive or negative, such as criteria that favor new activity on urban brownfield site compared to a rural greenfield site.
 - (e) whether the characteristics of the water body are changed such as more or less base flow
- (2) When giving the local government primary determination authority, the WQAG considered four situations that might be somewhat different:
- (a) New industrial facilities or major expansions of existing industrial operations
 - (b) New commercial/residential developments or major expansions of existing on semi-public community sewer systems
 - (c) Existing industrial facilities where permit modification is not related to any major change or expansion of the existing facility
 - (d) Existing commercial/residential development where permit modification is not related to any major change or expansion of the existing development (e.g. a residential development currently on septic system wishing to install sewage treatment plant)
- (3) For existing operations that are changing their permit conditions but not changing the size or nature of the operations, the presumption was that their continued existence in the same way accommodated important economic or social development in the area.
- (4) New industrial facilities or expansion of existing industrial facilities. Expansion for this purpose is considered an increase in production capacity of a current product beyond normal yearly increases or the generation of a new product that results in a new EPA BAT category or, if there is no categorical limit, to changing the plant's two-digit SIC code. The WQAG considered expansion to be that which changed the foot print of the operations. Alternatively, it was proposed that an expansion should be covered only if it resulted in a change in an industrial category with a clear definition of what industrial category means for that purpose.

The policy anticipates that a permit change that continues the same type of operation without a radical increase in production capacity would not require a review of whether the facility change accommodated important economic or social development. To revisit whether the company was important to the local economy for invisible changes at the plant that would makes its continuation more viable in the global market seem beyond the scope of the Clean Water Act. At the extreme, a change of solvent with no change in the number of widgets does not change the economic or social importance of the operation to the area.

However, changes that the local community would recognize as creating a different business or completely changing the type of business would benefit from review of whether the economic or social development was important.

- (5) When establishing a scoring system to evaluate the information to decide about the accommodation of economic or social development and considering citizen comments, it was suggested that a two-fold threshold for a positive determination be used. If IDEM receives a low number of negative comments, the scoring threshold for a positive decision will be set low. If IDEM receives a large number of negative comments, the threshold will be set higher.
- (6) Policies about new commercial/residential development with a semi-public NPDES or expansion of a development requiring a modification and policies about a new sewage treatment discharge permit for an existing development (e.g. now on septic system) would be the same.
- (7) Environmentalists expressed concern about the situation involving an existing facility that is considered by many locals to be undesirable and inhibiting development. These interests thought that some of these facilities should not be presumed important to the area. There was unresolved the concern about the adequacy of involving parties downstream of the discharge but outside of the local jurisdiction.
- (8) The regulated believed that land use decisions must remain at the local level, and that IDEM adds no special expertise for land use decisions.

3. Conclusions

This decision about an appropriate state policy for accommodation of important economic or social development is a difficult one but one that needs to be resolved in state regulation.

The WQAG found there are three options for the commissioner to consider.

- a) The option favored by the environmentalist community is one that would have IDEM make a site-specific decision after a local hearing in the area for each proposed lowering of water quality. The citizens would be educated about the character of the activity and the nature of the environmental impact.
- b) The option favored by the regulated is one that has no special decision by IDEM. In Indiana land use decisions are the purview of local government. Any activity in a local area that is allowed by local provisions is one by definition that has met the condition of accommodating important economic or social development in the area.
- c) A third option is a middle position that separates the decision into three different pathways depending on the circumstance. For existing facilities and developments, the presumption by regulation would be that the existing activity accommodates important economic or social development in the area. No explicit decision process is needed by IDEM for those situations, but those that disagree with the presumption can, during the public comment period for the draft permit, submit comments to IDEM in favor or against the proposal.

For new facilities or developments, the presumption is that if a local approval allowing public input was accomplished for the new activity and if information was made available during that process to the public about both the nature of activity's projected accommodation of economic or social development in the area and about any change to the

water body, that the accommodation test was met. Those that disagree with the presumption can during the public comment period for the draft permit. A local approval process could be by local government such as zoning or by another state agency, such as DNR, if the decision involves opportunity for effective local involvement.

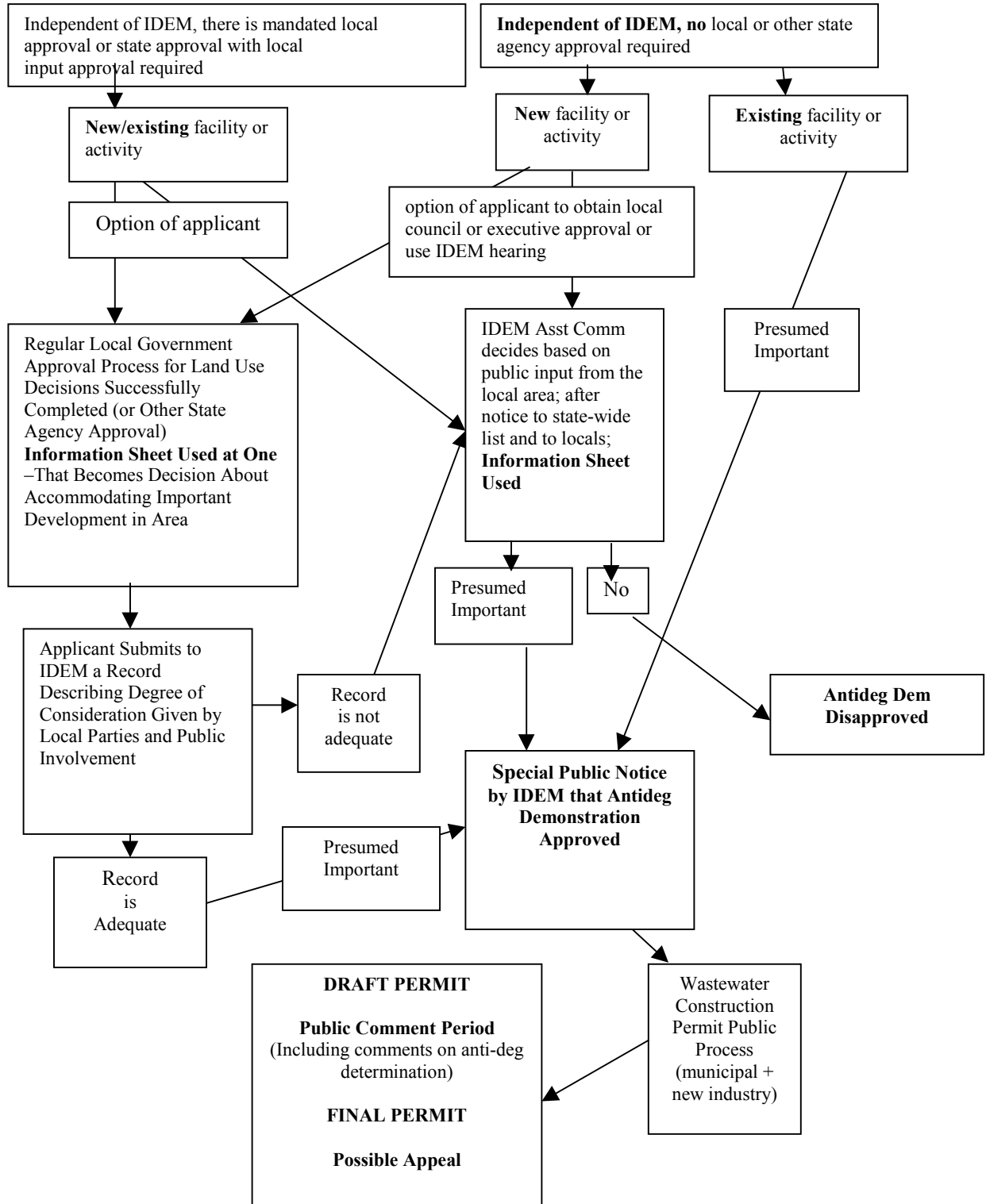
For other new activities, such as those applicants not wishing or able to use a local approval process, the IDEM decision must be accomplished through a local hearing with guidance specified in regulation about how it would make a consistent decision.

Chart J

(Suggestion to maximize public participation and minimize IDEM resource demands; involving local government without mandating new task to local government)

Assumes:

1. The proposed permit conditions will significantly lower water quality,
2. the discharge is determined to be necessary, and
3. activity not listed by rule as satisfying social/economic test



V. Biological Integrity Water Quality Criteria Policy

A. Issue

Biological integrity is the measure of the aquatic vitality of a water body by evaluating the number and type of species and individual organisms present compared against an understanding of what should be present. It is used in research to compare similar aquatic regimes. The policy question is whether biological integrity is a well enough developed analytical tool such that the measure is reproducible by different professionals and calibrated predictably to distinguish "good" from "bad" to have it serve as an understandable and appropriate legal water quality standard.

B. Discussion

At the suggestion of US EPA staff, IDEM recommended in 1997 that narrative biological integrity criteria language be added to the triennial review phase of the Indiana surface water quality rulemaking. When it appeared IDEM was insisting on this language, the 1998 General Assembly passed an act (SEA 343) that the Governor vetoed, that would have postponed the implementation of such provision if it were to have been promulgated in rule. The WQAG was asked to review the dispute.

The concept of biological integrity as a standard needs more precision before it can be decided first what that means in practical terms and secondly whether that is a good idea to incorporate in regulation in that way.

One primary characteristic of a water body that all agree is important is the nature of its biological components.

The current term for the ideal of this characteristic is the "biological integrity of water body." This is a measure of a healthy, desirable balance over the seasons and from year to year of an appropriate variety and amount of organisms given the particular water body.

The concept can be used as an assessment tool, as in "describe the biological integrity of the stretch of the river over the past decade" or it can be used as a definitive measure of quality, as in "how far is the biological quality of the river from having a desired biological integrity."

Used as a measure of quality, there is the difficult, subjective judgment of assigning the "desirable" quality that the water "should" have were it not for the many factors that are causing it to be less. Federal guidance in the TMDL program recognizes the hydrological character of most waters today is not the "natural" hydrology of pre-European settlement, but rather is influenced to a greater or lesser extent by land use and drainage changes. Therefore, the desired biological integrity must incorporate that reality.

The balance of organisms in a water body depends on many factors. Without human interference, diseases, population explosions, erosion, natural succession and weather play a role in assuring a constant change of the normal balance of organisms for a given water body. Biological interference due to human development (with introduction of exotic species of all types including recreational species) changes the normal balance. Land use changes to the hydrology (flow, temperature, and erosion) changes the normal balance. Finally, nutrients, pesticides, suspended solids and other chemicals can change the normal balance.

Therefore, an ideal biological integrity measure must sort out one or more of the factors to say this particular balance is the ideal that could be attained within a given set of circumstances. This is not a scientific matter. This is a fundamental policy decision, which must be made accounting for the science and all social implications of the policy.

Different scientists have established different sets of biological integrity measures in order to compare studies in different streams to each other. They, of course, do not make policy decisions. However building on their measures may be what is the wisest policy for a state, depending on the implications.

Evaluating water bodies using an agreed upon biological integrity index is generally regarded as good. Reasonable people can debate the quality of the studies but generally more good information the better. Setting subsequent initiatives and regulations in place to achieve an objective based on such results is good. Such publicly agreed upon objectives can then be incorporated by specific, enforceable requirements in permits. However, the establishment by state regulation the criteria that makes achievement of biological integrity in general as an enforceable water quality standard directly is much more problematic.

The characteristic of a good standard is one that the regulated, regulator and citizen can all understand in the same clear way. The general notion of "biological integrity" is not that precise. It varies from water body to water body and according to judgment of desirable (and achievable?) characteristics.

The WQAG discussed the value of biological integrity measures as valuable tools for assessing the quality of water bodies. With the current state of art of biological integrity in Indiana, many members of the WQAG thought that the uncertainty of the technique is too large for direct compliance purposes as a universal standard due to the following:

1. Different aquatic ecosystems have different ideals that have not yet been systematically catalogued and agreed to in Indiana; and
2. For a given aquatic ecosystem, there is usually great uncertainty about the cause and effect to assure compliance with a particular numeric biological integrity value within a wide spectrum of contributing and interrelated stressors.

The WQAG furthered discussed whether it would be wise understand the biological integrity of a water body, and then to address the stressors through current legal authorities (e.g. modify discharge permit for a particular parameter if that is determined to be the primary or significant contributing cause; modify the TMDL development plan using this information).

C. Conclusion

The WQAG found from experts in the field that the tool is excellent and appropriate as a research tool to evaluate Indiana waters but is yet far from adequate to serve as an enforceable standard. The WQAG found that its use should be increased in the state to inform Indiana water policy priorities but that it not be promulgated as a standard.

VI. Sediment Water Quality Criteria Policy

A. Issue

Sediment quality is several different policies. It is the presence of chemical contaminants in sediments, either naturally occurring or anthropogenic, that would pose short and long term toxic effects to the aquatic systems and humans. It is the presence of human-generated components such as sewage that create an unnatural anaerobic environment toxic to aerobic species. It is presence of human-caused conditions to make a naturally anaerobic situation such as a swamp aerobic and thus toxic to the anaerobic organisms. It is the presence of exotic flora and fauna out-competing the native system. It is the very presence of sediments in the wrong amounts, in the wrong place and wrong time (such as covering spawning grounds of certain fish in spring).

The policy question is whether sediment quality itself is a well enough developed analytical tool such that the measure is reproducible by different professionals and calibrated predictably to distinguish "good" from "bad" to have it serve as an understandable and appropriate legal water quality standard.

B. Discussion

At the suggestion of US EPA staff, IDEM recommended in 1997 that narrative sediment criteria language be added to the triennial review phase of the Indiana surface water quality rulemaking. When it appeared IDEM was insisting on this language, the 1998 General Assembly passed an act (SEA 343) that the Governor vetoed, that would have postponed the implementation of such provision if it were to have been promulgated in rule. The WQAG was asked to review the dispute.

There were two objections to the EPA/IDEM proposed narrative language that said essentially that all sediment needed to be free of harmful material.

1. It was too vague for environmentalist community to be sure that the prohibition could be successfully enforced.
2. It was too vague for the regulated community to know how they were expected to perform in order not to be in violation of this standard when it was incorporated into their discharge permit.

At an early WQAG meeting, IDEM acknowledged that the provision itself would not increase its existing authority to change a discharger's NPDES permit condition to protect sediment from harm. IDEM said they did not plan to enforce the sediment narrative criteria directly as a violation of a permit condition, but rather would change the permit, as they have authority now to do. During discussions, an issue as to whether the Clean Water Act or state statute give authority for the Water Pollution Control Board to create a water quality standard for sediment was raised.

Sediment is more like soil than water column. Contamination of it does not tend to diffuse to a homogeneous concentration over large volume like in water. Rather, the contamination at one location may or may not have any relation to a contamination nearby. Similarly, while the concentration of a substance in a water column exposes all organisms in the water column, the concentration of a substance in sediment affects only the organisms at that layer and location of the sediment (and wherever that organism may cause the substance to be spread). The toxicity

and mobility of a substance in sediment can be highly dependent on the chemical and physical characteristics of the layer or sediment it finds itself in.

All these reasons make assignment of a single numeric or narrative criterion for an "acceptable" or "unacceptable" concentration of a parameter in sediment as difficult of a task as the assignment of single criterion for soil. Nonetheless, more precise state direction about sediment quality would be helpful for all parties engaged in Indiana water quality policy.

The purpose of a quality measure for sediments should be:

1. To help know which sediments could need remediation from legacy pollutants;
2. To help know when such remediation is adequate and appropriate;
3. To help restrict discharge into waterways that would negatively impact sediment; and
4. To help distinguish quality of sediment as measured by concentration of a parameter from biological integrity of the sediment from the physical nature of the sediments in that place and time.

The core matrix of sediment in waterbodies is soil of various sized particles. Organic material is another component.

Given a particular reach of a water body, sediment may be good for one type of habitat and bad for another. Sediment may be harmful for some fish during egg-laying times but beneficial to the overall aquatic community at others.

Where sediment is stable, different layers have different access to biota or to physical scouring. In addition, the WQAG discussed the issues of "natural" versus "unnatural" sediment at a particular location or at a particular time relative to seasonal, annual and multiple year cycles in stream flow.

The WQAG discussed what might define the appropriate chemical quality of the sediment. The following types of chemical quality in sediments and what their potential for water quality impacts may be were discussed:

1. Concentration of persistent, bioaccumulative chemicals (certain organics or metallo-organics). These compounds are slow to biodegrade. They are especially fat-soluble and, depending on the aquatic food chain present, fattier fish will eat fatty fish causing the absolute chemical concentration to increase higher on the food chain.
2. Concentration of persistent chemicals (metals and certain organics). Metals always are metals, although depending on the valence state, the chemicals they are bonded to and the pH of the sediment, the water solubility may range from high to very low.
3. Concentration of nutrients and organic material . Eutrophication and anaerobic sediments may be desired or may be considered bad depending on the location.
4. Concentration of other objectionable materials. Oils (from acceptable sources or not), E. coli, temporary concentrations of water soluble/readily degradable substances

The WQAG discussed the appropriateness of sediment criteria at a particular location.

Studies in many states have been performed but in a manner coordinated only after the fact with necessarily great subjectivity in terms of relative quality of the particular sediments observed. There seems to be heavy use of grading sediment compared to "normal," which itself can vary widely. In some cases, the set of sediment quality was graded on the curve resulting in the top 25% and the bottom 25%, independent of the question of whether either or both were "normal." That is sound science but incorrect for regulatory policy.

The WQAG listened to presentations by U.S. EPA and IDEM about the state of the art in science and in use across the country of sediment assessments. The WQAG learned that the quality of sediment character to support a desired biological mix of species has many characteristics independent of the toxic chemical concentration. One assessment tool is the use of vitality of indicator species, either by observation of what is present or by observing the vitality after introduction of a species to a sample of the sediment. Another is a measure of biological integrity of the sediment to determine its relative quality. Another is a chemical assessment of "toxic" chemical concentrations of a particular parameter. Transforming this into a numeric valuation would require understanding specific toxicities to numerous benthic species or to release rates from the sediment for those with known levels of aquatic organism toxicity. However, probably the toxic compounds of greatest public health concern in sediments are those persistent, bioaccumulative compounds that are nontoxic to the benthic organisms but which accumulate through the benthic organisms through the food chain to concentrations in the higher trophic species toxic to them.

C. Conclusion

The WQAG found from experts in the field that the tool is excellent and appropriate as a research tool to evaluate Indiana waters but is yet far from adequate to serve as an enforceable standard. The WQAG found that its use should be increased in the state to inform Indiana water policy priorities but that it not be promulgated as a standard.

APPENDIX A

WATER QUALITY ADVISORY GROUP
MEMBERS LIST

Water Quality Advisory Group Members List

Mr. John Fekete, Chair
Industry (Ispat Inland Steel)
Water Pollution Control Board

Representative David Wolkins
Town of Winona Lake

Mr. Tom Anderson
Save the Dunes Council

Dr. Bill Beranek
Indiana Environmental Institute

Mr. John Wilkins
Eli Lilly & Company

Professor Dan Cole
Indiana University School of Law

Senator Beverly Gard
City of Greenfield

Ms. Jody Traub
U.S. EPA Region 5, Water
Division

Mr. Mike Jordan
Local Government (Seymour),
Water Pollution Control Board

Mayor Sonya Margerum
City of West Lafayette

Representative Dale Sturtz
Town of LaGrange

Mr. Tom McKenna
(Melanie Solmos substituted)
Indiana Department of Commerce

Mr. Bowden Quinn
Environmental Organization
(Grand Cal Task Force),
Water Pollution Control Board

Senator Vi Simpson
City of Bloomington

Dr. Rae Schnapp
Hoosier Environmental Council

Dr. Ron Wukasch
Purdue University
Water Pollution Control Board

Supporting IDEM Staff

Beth Admire
Lonnie Brumfield
Julie Bye
Mary Ellen Gray
Terry Lewis

John Nixon
Betsy Rouse
Chris Rousch
Matt Rueff
Barbara Scott

Kari Simonelic
MaryAnn Stevens
Kiran Verma
Lawrence Wu

APPENDIX B

RECOMMENDATIONS FROM THE TECHNICAL SUBCOMMITTEE TO THE WATER QUALITY ADVISORY GROUP FOR DETERMINING AMBIENT CONCENTRATIONS OF POLLUTANTS June 5, 2001

**Recommendations from the Technical Subcommittee
to the
Water Quality Advisory Group
for Determining Ambient Concentrations of Pollutants
June 5, 2001**

Introduction

On August 9, 2000, the Water Quality Advisory Group (WQAG) formed a technical subcommittee to develop a protocol to determine the ambient³ concentrations of pollutants in surface waters for the purpose of antidegradation implementation. The technical subcommittee members are volunteer representatives from the environmental community, industry, environmental consultants, and Office of Water Quality (OWQ) staff. These recommendations are in the form of answers to each of the questions listed in Document A of the WQAG packet distributed by OWQ at the August 9, 2000, WQAG meeting.

It is important to identify the ambient concentration of pollutants in surface waters to determine the unused loading capacity (ULC) that will be used to make antidegradation decisions.

The recommendations that are contained in this report will be used to write an ambient concentration determination protocol document.

Almost every recommendation made in the following document would involve increased expenditures of resources. These expenditures should be available from the NPDES permit fee fund which was created by the Indiana legislature to fund, among other programs, an adequate level of resources to collect and analyze ambient stream data that are needed to properly implement the NPDES permit program. This subcommittee strongly urges the WQAG to recommend to Commissioner Kaplan that OWQ use NPDES permit fee monies for improving specific aspects of this program.

The Question: How should existing water quality be determined (ambient)? In other words, what should an ambient determination protocol contain or require?

The recommendations below follow a format based on issues/questions specifically outlined by the WQAG. Specific recommendations follow each issue. In some cases, detailed discussion information follows a recommendation to help illustrate and support a recommendation.

1. How many data are needed? How many analytical results are needed? Should the data be collected seasonally, annually, and multi-annually?

The data requirements (number, etc.) need to be determined with regard to program needs concerning sensitivity, costs, water quality conditions (how close is the ambient value to the water quality criterion), and desired confidence in the data, using appropriate statistical analysis. Appendix A

³ During discussion, the subcommittee decided there was a need to determine the appropriate use of the terms “background” and “ambient.” The two terms were being used interchangeably. Background was used to mean without the influence of anthropogenic activities or sources. Ambient was used to mean the current conditions, regardless of influences. The recommendation of the subcommittee is that OWQ use the term “ambient,” instead of “background” or “ambient background.” For the purposes of antidegradation and setting water quality-based effluent limits, the term “ambient” concentration is the concentration of a pollutant in a water body immediately upstream of the point or nonpoint source discharge under consideration. In some cases, it may be appropriate to consider a point downstream of a discharge as the point where “ambient” conditions should be defined.

contains a more detailed discussion of the statistical considerations, analytical approaches, and the relationships among these factors and the program goals.

Additionally, the following items should be factored into this determination:

- OWQ should screen the available ambient data to determine if there is an adequate amount of data.
- OWQ should screen data to determine if ambient data from all seasons are needed, if not included.
- OWQ should be allowed to set the ambient value at zero when the parameter does not occur naturally in the water body and there are no anthropogenic sources of the parameter.
- OWQ should be allowed (in agreement with the permittee) to calculate the ambient concentration of a parameter that is known to occur in the water from anthropogenic sources when the upstream sources are known, and information, such as permit limitations, effluent monitoring, and Form 2C Application information, from the upstream sources of the parameter exists.

2. Should a differentiation between wet and dry weather stream conditions be considered?

- OWQ should review the data to determine if wet weather or dry weather stream conditions influence “ambient” concentrations.

3. Should ambient data be collected using a grab or composite method type? Both?

- Grab sampling, as a function of time, is adequate for the purpose of determining ambient concentrations unless, for particular pollutants, diurnal considerations are important. Depth and spatial sampling may need to be considered in certain stream situations.

4. What method should be used to statistically summarize ambient data? Arithmetic, geometric mean, percentile?

- The geometric mean has been determined to be the appropriate method when data follow either a normal or log-normal distribution. Ambient data that do not fit a normal or log-normal distribution will require another method to determine the central tendency. OWQ will need to consult the GLI rules, EPA guidance in EPA/600/R-96/084 or statisticians available through contract to identify another method for use when data do not follow a normal or log-normal distribution.
- The issue of accounting for censored (non-detect) data needs to be consistent throughout Indiana. Censored data should be handled as follows. If more than 50% of the data are censored, then a more rigorous statistical analysis should be used for analysis, such as probit analysis or Robust curve fitting. When less than 50% of the data are censored, then substitution statistics are appropriate.

5. Who should be responsible for collecting this data? Permittees, OWQ, others, all of the above?

- OWQ is ultimately responsible for guaranteeing that appropriate ambient water quality data are used in making determinations on ambient water quality. IDEM or the permittee may be responsible for collecting and insuring the validity of data for determining ambient water quality. The annual permit fee fund should be made available to OWQ for the collection and laboratory analysis of the ambient waterbody samples to support processing NPDES permit applications and antidegradation determinations.

- OWQ should investigate the development of default ambient waterbody values for use in antidegradation and permitting procedures when data do not exist at a specific location.
- OWQ needs to develop a database of ambient data that can be evaluated on a waterbody by waterbody basis.

6. Who would be responsible for evaluating the data?

- OWQ is responsible for evaluating the data. OWQ should use statistical methods to determine if an ambient database for a waterbody is adequate and representative. OWQ, based on the distribution of the data and accounting for the censored data, should apply the appropriate statistical analysis to summarize the data.

7. Establishing QA/QC?

- All data submitted to OWQ or collected by OWQ for evaluation must be analyzed in accordance with test methods in 40 CFR 136 or other approved methods (such as SW-846 used by OLQ, etc.).

Assumptions

The subcommittee is basing the foregoing recommendations on the following assumptions. Please note that as a protocol is implemented, these assumptions may need to be revisited.

- There are limited resources available for the collection of an adequate amount of ambient water quality data from every stream in Indiana that receives discharges from NPDES permittees.
- OWQ's fixed station stream sampling program will continue to be conducted on a routine frequency (i.e., monthly or quarterly). Sampling is conducted randomly with respect to stream flow. The ambient concentration calculated using data collected from various stream flow conditions will be assumed to represent critical stream flow conditions for antidegradation and WQBEL determinations.
- It is not practical to use one procedure to statistically summarize ambient data to calculate the unused loading capacity/WQBEL determinations and for assessing water quality to determine impaired water bodies.
- OWQ uses steady-state modeling to calculate WQBELs, but the department does allow the use of dynamic models when sufficient data are available.

General Recommendations

- OWQ should use monies from the permit fee fund to improve the surface water monitoring program by: (1) increasing the number of stream assessment personnel; (2) enhancing data collection; (3) establishing and maintaining a database of ambient stream data that is accessible; (4) developing data analysis methods; and (5) hiring a statistician as a full-time staff member of OWQ.
- The ambient concentration of a parameter in a waterbody should be determined using a valid statistical procedure to summarize the data. This procedure should be used to calculate the "unused loading capacity" (ULC) value for antidegradation and will be used to calculate water quality-based effluent limitations (WQBELs) for the NPDES permitting program.
- OWQ needs to develop short-term and long-term plans to improve the quality of its process for determining ambient concentrations of pollutants for NPDES permitting purposes.

- The short-term plan should identify and incorporate methods to improve the management of permit applications from existing and new dischargers when limited or no ambient data exist and data cannot be collected within a time frame to meet program needs.
- The long-term plan should identify and incorporate methods to improve the adequacy and representativeness of ambient water quality data through improved statistical evaluations and data collection efforts.

Short -Term Plan Recommendations

- OWQ needs to develop a protocol for identifying watersheds that are similar when evaluated according to such characteristics as land use, geology, soil types, and hydrology. With the existence of such a protocol, data collected from one waterbody could be used for a similar waterbody for which ambient data is lacking.
- OWQ needs to identify parameters that should be added to the fixed station data collection program.
- OWQ needs to establish and distribute a list of possible resources that OWQ staff and the public may review in order to gather acceptable data for use in ambient determinations.

Other topics identified during discussions by the WQAG, Technical Advisory Group that need consideration

- OWQ needs to collect dissolved metals data in ambient waters.
- OWQ should develop and implement a state-wide plan to assess the relationship between total recoverable metals and dissolved metals for use in Total vs. Dissolved metals determinations.
- The stream flow should be recorded when ambient samples are taken.

Factors that are important in the determination of a statistical approach to determine an ambient value depend on the following:

- The precision required in measurement
- Sensitivity of the data application
- Variation (variability) of the population sampled
- The anticipated data distribution
- Whether the parameter is dependent or independent of other variables
- The level of confidence required in the estimate (this is related to Sensitivity of the data application)
- The level of resources available, including money, time, tools and expected outcome

The Technical Advisory Group reviewed a case study that uses the following statistical method in order to determine the number of samples needed to develop a statistically valid data set for use in determining ambient concentrations:

This method assumes that data are normally distributed and independent. The method requires defining how large a measurement error can be tolerated in the estimate and the confidence needed in estimating the sample mean.

In the example presented to the Technical Advisory Group, the method was tailored for a ninety-five percent (95%) confidence limit computed for sample mean.

95% confidence is determined by: $\text{Mean} \pm 2s/\sqrt{n}$

$$L = 2s/\sqrt{n} \quad (\text{Equation 1})$$

$$n = 4s^2/L^2 \quad (\text{Equation 2})$$

Where:

n = the number of samples required

s = standard deviation of the database (either determined or estimated)

L = the allowable error (e.g., desired precision)

Equations 1 and 2 can be modified for the confidence limit based on the needs of the permitting staff as shown in Table 1 on the next page.

Table 1 shows the confidence level, its associated critical value, and the equation that would define “n.” Please note that in the equation in Table 1 for 95% confidence level, the number 3.84 is used to calculate “n.” In Equation 2 above, the number is 4. The 4 is 3.84 rounded to 4. In Equation 1 above, the 2 is rounded from the critical value of 1.96 for a 95% confidence level.

Confidence Level (%)	Critical Value	Equation	
70	1.04	$n = 1.073 * s^2 / L^2$	
75	1.20	$n = 1.441 * s^2 / L^2$	
80	1.28	$n = 1.638 * s^2 / L^2$	
85	1.44	$n = 2.074 * s^2 / L^2$	
90	1.65	$n = 2.72 * s^2 / L^2$	
95	1.96	$n = 3.84 * s^2 / L^2$	
99	2.78	$n = 7.73 * s^2 / L^2$	

TABLE 1

APPENDIX C

GOALS AND POLICIES OF THE CLEAN WATER ACT

Goals and Policies of the Clean Water Act

In its declaration of goals and policies contained in section 1251(a) of the Clean Water Act (33 U.S.C. 1251 et seq.) Congress set forth seven basic objectives:

1. Elimination of the discharge of pollutants into the navigable waters.
2. Wherever attainable, a level of water quality which “provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water.”
3. Prohibition of the discharge of toxic pollutants in toxic amount.
4. Federal financial assistance is to be provided to construct publicly owned treatment works.
5. The development of area wide waste treatment management planning processes.
6. Major research and demonstration efforts to develop technology necessary to eliminate the discharge of pollutants.
7. Development and implementation of programs for the control of nonpoint sources of pollution.

The overall objective of these seven goals and policies is to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

In section 1251(b) of the Act, Congress also set forth its policy to “recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, [and] to plan the development and use ... of land and water resources....”

APPENDIX D

INDIANA'S EXISTING ANTIDEGRADATION
STANDARDS IN REGULATION

Indiana's Antidegradation Standards

Introduction

Indiana has two antidegradation standards. There is one standard for the non-Great Lakes portion of the State at 327 IAC 2-1-2 that was promulgated in March 1990. The antidegradation standard for the Great Lakes portion of the State is at 327 IAC 2-1.5-4 and was promulgated in March of 1997. The text of each standard is located under **Indiana's Antidegradation Standards** below.

Since the WQAG Report focuses its antidegradation discussion on high quality waters, this document will only discuss the provisions in the two antidegradation standards that cover high quality waters.

Comparison of the Antidegradation Standards

There are significant differences in the two antidegradation standards for high quality waters.

The non-Great Lakes standard limits the justification of limited degradation to a showing that it is for "...necessary economic or social factors..." whereas the Great Lakes standard states that "...allowing lower quality is necessary and accommodates important economic or social development in the area in which the waters are located." In other words, the "necessary" test in the non-Great Lakes standard is for either economic reasons or social reasons where, in the Great Lakes standard, the "necessary" test requires a showing that the lowering of water quality is necessary (for what is not absolutely certain) and that it accommodates important economic or social development in the area.

The Great Lakes standard requires that in a high quality water, nonpoint sources of water (water sources that are not required to obtain an NPDES permit) be controlled by "... all-cost effective and reasonable best management practices..."

The Great Lakes standard requires that the lowering of water quality determination be conducted on a pollutant by pollutant basis whereas the non-Great Lakes standard does not make this distinction.

Antidegradation Implementation Procedures

There are no antidegradation implementation procedures for the non-Great Lakes area in Indiana.

There are antidegradation implementation procedures for the Great Lakes area in Indiana. In 327 IAC 5-2-11.3, antidegradation implementation procedures exist for high quality waters. In 327 IAC 5-2-11.7, antidegradation implementation procedures exist for Outstanding State Resource Waters (OSRWs) that are also classified as high quality waters.

The high quality water antidegradation implementation procedures in 327 IAC 5-2-11.3 contain the following provisions:

- 1) defines significant lowering of water quality,
- 2) lists actions a discharger may implement that are not considered to be classified as causing significant lowering of water quality,
- 3) identifies the antidegradation demonstration information that will be submitted by the discharger for the commissioner of IDEM to evaluate as to whether the action the discharger proposes would cause a significant lowering of water quality, and
- 4) the procedure the commissioner will follow to either approve, partially approve or deny the request to significantly lower water quality.

The high quality water antidegradation implementation procedures in 327 IAC 5-2-11.7 for OSRWs contains similar provisions. The major differences are:

- 1) significant lowering is not defined. Instead, it states that existing dischargers may increase the discharge of a pollutant by the same level of the pollutant concentration in the receiving stream.
- 2) there is a distinction made between a discharge directly into an OSRW and a discharge into a tributary of an OSRW. All of 11.7 applies to a discharge directly into an OSRW. A discharge to a tributary of an OSRW is required to comply with 327 IAC 5-2-11.3(a) and (b) and shall not cause a significant lowering of water quality in the OSRW.
- 3) 11.7 contains a specific provision for the use of wastewater and water treatment additives (other than BCCs). This provision only applies if there is an immediate need for these types of additives.

Indiana's Antidegradation Standards

Indiana non-Great Lakes Antidegradation Standard

327 IAC 2-1-2 (1) “ For all waters of the state, existing beneficial uses shall be maintained and protected. No degradation of water quality shall be permitted which would interfere with or become injurious to existing and potential uses.

"(2) All waters whose existing quality exceeds the standards established herein as of February 17, 1977, shall be maintained in their present high quality unless and until it is affirmatively demonstrated to the commissioner that limited degradation of such waters is justifiable on the basis of necessary economic or social factors and will not interfere with or become injurious to any beneficial uses made of, or presently possible, in such waters. In making a final determination under this subdivision, the commissioner shall give appropriate consideration to public participation and intergovernmental coordination."

(3) The following waters of high quality, as defined in subdivision (2), are designated by the board to be an outstanding state resource and shall be maintained in their present high quality without degradation:

(A) The Blue River in Washington, Crawford, and Harrison Counties, from river mile 57.0 to river mile 11.5.

(B) The North Fork of Wildcat Creek in Carroll and Tippecanoe Counties, from river mile 43.11 to river mile 4.82.

(C) The South Fork of Wildcat Creek in Tippecanoe County, from river mile 10.21 to river mile 0.00.

(4) Any determination made by the commissioner in accordance with Section 316 of the Clean Water Act concerning alternative thermal effluent limitations will be considered to be consistent with the policies enunciated in this section.

Indiana Great Lakes Antidegradation Standard

327 IAC 2-1.5-4 " (a) For all surface waters of the state within the Great Lakes system, existing instream water uses and the level of water quality necessary to protect existing uses shall be maintained and protected. Where designated uses of the waterbody are impaired, there shall be no lowering of the water quality with respect to the pollutant or pollutants that are causing the impairment.

"(b) Any surface water of the state within the Great Lakes system whose existing quality for any parameter exceeds the criteria established within this rule shall be considered high quality for that parameter consistent with the definition of high quality water found in this rule; and that quality shall be maintained and protected unless the commissioner finds, after full satisfaction of intergovernmental coordination and public participation provisions under 327 IAC 5-2-11.3, that **allowing lower quality is necessary and accommodates [sic, accommodates] important economic or social development in the area in which the waters are located**. In allowing such degradation, the commissioner shall assure water quality adequate to protect existing uses fully [sic, fully]. Further, the commissioner shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all-cost effective and reasonable best management practices for nonpoint source control. The commissioner shall utilize the antidegradation implementation procedures under 327 IAC 5-2-11.3 in determining is [sic, if] a significant lowering of water quality will be allowed."

(c) From the effective date of this section until the expiration date of 327 IAC 5-2-11.7, all high quality waters designated under section 19(b) of this rule as an outstanding state resource water shall be maintained and protected in their present high quality without degradation. Upon expiration of 327 IAC 5-2-11.7, all high quality waters designated under section 19(b) of this rule as an outstanding state resource water shall be maintained in their present high quality without degradation.

(d) High quality waters designated as an outstanding national resource water (such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or ecological significance) shall be maintained and protected in their present high quality without degradation.

(e) In those cases where the potential lowering of water quality is associated with a thermal discharge, the decision to allow such degradation shall be consistent with Section 316 of the Clean Water Act and 327 IAC 5-7.

SEA 431

SEA 431, passed in the 2001 legislative session, contained provisions that covered antidegradation of OSRWs. It requires the department to prepare a list of impaired waters, to adopt rules on the methodology to be used to identify waters as impaired and to remove impaired waters from the list. It defined degradation with respect to OSRWs, exceptional use waters, and ONRWs. It allows the Water Board to adopt a rule to

designate a water body as an OSRW. It restricted the designation of an ONRW to the General Assembly. Finally, it requires the Water Board to adopt a rule that prevent degradation and allow for increases and additions in pollutant loadings from existing and new discharges into OSRWs. This rule is required to include:

- 1) a definition of "significant lowering of water quality" and a de minimis value,
- 2) procedures to implement a water quality project in the OSRW watershed or pay a fee into an OSRW improvement fund, and
- 3) criteria for submission and approval of watershed improvement projects.

APPENDIX E

A CORE DISPUTE ON TWO PRINCIPLES
FOR ANTIDEGRADATION POLICY DECISIONS

Appendix E: A Core Dispute on Two Principles for Antidegradation Policy Decisions

There was agreement among WQAG members that the fundamental principle for decision making about antidegradation is that the antidegradation policy is to focus on aspects of improving the quality of the waterbody that are long-term. Two other principles were proposed to guide decision making but there was disagreement about how to describe and apply these. One is principle about decisions under uncertainty and the second is about allocation of scarce resources to the greatest environmental advantage.

One is the primary principle of the environmentalists. This is the need to act to protect the environment and human health in cases of uncertainty according to the precautionary principle defined as: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken, even if some cause and effect relationships are not fully established scientifically." Antidegradation under the Clean Water Act incorporates the protective features under uncertainty and threats of harm, as well as shifting the burden of proof to the proponent of an activity, a key implementation provision of the precautionary principle.

Dissenters argue that the precautionary principle, relating as it does to an assessment of harm, ought not to be used in the antidegradation policy. The principle should be used when establishing the designated uses, water quality criteria and other site-specific protections for permit limits. Human health and environmental health issues are addressed there, not in the antidegradation process. Antidegradation is strictly used for maintaining existing good quality or pristine conditions.

A primary principle of the regulated related to the question of economic resource efficiency when making these policy decisions. This is the policy about the amount of environmental benefit from working through the antidegradation procedures in each situation and also the line of how much extra pollution reduction is appropriate given what cost.

Inside this we ask "what is the long-term goal being sought that is different than maintaining the existing use of a water that is high quality for the parameter?" What is the economic advantage between maintaining existing use versus improving existing quality?

This resource principle has two separate components: the public costs of the state agency resources devoted to a course of action and the costs to the regulated to implement a policy.

When considering public resources, the essence of this disagreement among WQAG members about this principle is advice to IDEM about how aggressive the Clean Water Act demands the State should be with respect to antidegradation implementation compared to other water quality protection measures those resources could be devoted to. If there is a limit on the state government resources (money, trained staff) available to implement its water quality programs, how best should those resources be spent? For instance, what ought relative state attention be to assessment and TMDL program for impaired waters versus antidegradation for high quality waters? Thinking of antidegradation alone, it would be easy to overwhelm the IDEM system with demonstrations for minor decisions. This principle takes those factors into consideration.

Dissenters argue that there should be adequate resources devoted to surface water protection. Resources should be expanded to implement appropriate policies; policies ought not be adjusted on the basis of resources available.

Likewise, at a bigger picture level, what is the benefit to expenditures by the private sector compared to other expenditures for other societal benefits? Ultimately the consumer and taxpayer pays both directly or indirectly.

The environmentalists argue that the short-term cost-benefit analysis inherent in a private sector resource efficiency analysis ought not to be considered in this aspect of the Clean Water Act policy, which instead looks at long-term societal goals. A long-term sustainable economy values surface water quality protection much higher than the short-term cost-benefit analysis of the present value of this generation's activities. The regulated argue that although the Clean Water Act clearly expresses long-term goals of aggressive water quality protection, economic resource efficiency is a core part of Clean Water Act philosophy in matters such as establishing Best Available Technology as Economically Feasible and basing the standards on either the existing use or on what the state considers it would like the designated use to become.

The environmentalist position states that the most important goal of the Clean Water Act is to eliminate pollution into navigable waters. The Tier II antidegradation policy derives from this goal and therefore this part of the act anticipates additional pollution should be allowed only if it is necessary to achieve "important" social or economic development. This part of the act is intended to change the way that our society perceives waterbodies. Rather than continuing to view all waterbodies as convenient wastestreams that shift the cost of pollution from the discharger to society as a whole, antidegradation takes the long-term view that clean waterbodies are ultimately more valuable than short-term economic benefits. And so also for all other water pollution initiatives. Achievement of the Clean Water Act goal of elimination of water pollution remains a viable option for our society, but only if we force technological innovation by strictly limiting additional pollution whenever possible.

The position of the regulated is that the elimination of discharge of pollution is a viable option only if we consider pollution as that which causes harm. The permit limit itself and the nonpoint TMDL program address preventing harm to waters through use of designated uses and water quality criterion, not antidegradation.

As for cost distribution, society as a whole bears the cost of regulations on the regulated, not just the regulated themselves. Costs will necessarily force businesses to locations with competitive business climate.

The position of the regulated states that 1) requirement to maintain existing use refers to nothing beyond whether the water quality standards set to achieve designated use are being met (therefore the discussion is moot for any valid NPDES permit), 2) the Court has declared the Clean Water Act (unlike the Clean Air Act) to have imbedded in it a requirement for wise use of resources as its goal is achieved over time, such as the Best Available Technology Economically Achievable policy (therefore economic efficiency is a part of the discussion) and 3) practically speaking, in a time of economic crisis, the State must decide how to balance limited resources to achieve its most important water quality environmental benefits.

Despite the disagreement about application of these two principles, all WQAG members acknowledged the extraordinary difficulty under which IDEM OWQ staff work given the resource limitations and the ambiguities of federal and state direction in regulation or written policy.

APPENDIX F

WQAG Supplementary Documents Table of Contents

Appendix F: WQAG Supplementary Documents Table of Contents

(Key Presentations and Responses to WQAG – Information Considered by the WQAG to Develop Its Findings. These Documents Were Neither Endorsed Nor Disapproved Of by the WQAG.)

- 1. Indiana General Assembly Senate Enrolled Act 431**
Summary: The Act of the 2001 General Assembly that revised state policy for Outstanding State Resource Waters including antidegradation policy and for wet weather quality standards for CSO outfalls. The WQAG discussions on these matters in the fall of 1999 were used as a base for the development of the bill.
Spring 2001
Source/Contact: Indiana Legislative Service Agency
- 2. IDEM Long Term Control Plan Policy Issues Document**
Summary: The document is the result of an IDEM-led task force of representatives of municipalities, environmentalists and technical experts to list and discuss key policy issues for an approvable long term control plan.
December 1999
Source/Contract: Reggie Baker, IDEM
- 3. A Researchers Perspective on Biocriteria as a Tool for Decision-Making Presented at the May 9, 2001 WQAG meeting.**
Summary: A PowerPoint presentation that showed the development of a multimetric or IBI-type of assessment index.
5/09/01
Source/Contact: Thomas P. Simon, Ph. D.
- 4. Development of the Index of Biotic Integrity for Fish Communities in Indiana at the May 9, 2001 WQAG meeting.**
Summary: A PowerPoint presentation from the Biological Studies Section, Assessment.
5/9/01
Source/Contact: Stacey Sobat, Steven Newhouse, Lee Bridges & James Stahl
- 5. Macroinvertebrate Community Bioassessment Program at the June 13, 2001, WQAG meeting.**
Summary: A PowerPoint presentation from the Biological Studies Section, Assessment Branch.
6/13/01
Source/Contact: Steve Newhouse, Lee Bridges, James Stahl, Todd Davis
- 6. Types and Objectives of Sediment Quality Assessments were presented at the June 13, 2001 WQAG meeting.**
Summary: A PowerPoint presentation given by D. Scott Ireland, USEPA/OW/OST, Washington, DC.
6/13/01
Source/Contact: Scott Ireland

7. **Indiana Water Quality Coalition Positions (IWQCP) on Antidegradation and Biological and Sediment Criteria presented at the 2/13/02 WQAG meeting.**

Summary: This report consist of multi-documents stating the regulated community coalition's position on the following issues: background concentration, antidegradation exceptions, insignificant lowerings/de minimis, technical necessity of lowering of water quality, demonstration of important or social development, biological criteria, and sediment criteria. There is an executive summary and a section for each issue.

2/13/02

Source/Contact: Patrick Bennett, Keri Evans

8. **Environmental Position Paper on the Tier 2 Antidegradation Standard Implementation Procedure and Demonstration**

Summary: This four-page document explains the environmentalist position on the antidegradation standard, antidegradation implementation for significant lowering/de minimis and antidegradation demonstration.

3/10/02

Source Contact: Bowden Quinn, Rae Schnapp, Charlotte Read

APPENDIX G

WQAG HISTORICAL DOCUMENTS - THE LIST

APPENDIX G

WQAG Historical Document List

(documents are available in IDEM file room and from IDEM OWQ office)
(note item 15 Governor Letter on signing of SEA 431 explaining history and role of the WQAG)

- 1. Presentation on Indiana Water Quality Issues and First WQAG Meeting Agenda**
Summary: First meeting agenda with slides of IDEM presentation on the WQAG issues and the related anticipated rulemaking timetable.
8/11/99
Source/Contact: IDEM
- 2. Proposed Framework for Addressing Outstanding State Resource Water Policy**
Summary: An 8-page document for WQAG discussion with history of issue, stakeholder positions and possible approaches for resolution.
8/28/99
Source/Contact: Bill Beranek
- 3. Lake Michigan Designation & Use**
Summary: Synopsis of discussion between Charlotte Read and John Fekete on OSRW from perspective of Lake Michigan issues John Fekete/Charlotte Read
9/7/99
Source/Contact: John Fekete/Charlotte Read
- 4. IDEM's Goals for the Water Quality Advisory Group**
Summary: Initial task list for WQAG.
9/8/99
Source/Contact: IDEM
- 5. A Special Designation/Antidegradation Framework for Discussion Based on a Conversation Between Rae Schnapp, Bill Beranek, Mary Ellen Gray, and Kari Simonelic**
Summary: Proposal for WQAG policy recommendation dividing special designation waters into two categories (1) pristine and (2) having other special qualities or characteristics. Discussion piece for October 13, 1999 WQAG meeting.
10/1/99
Source/Contact: IDEM

6. **Key Definitions in Special Designation and Antidegradation**
Summary: Glossary of key terms for common understanding of legal and technical implications..
10/13/99
Source/Contact: IDEM
7. **WQAG Antidegradation Policy Framework Table**
Summary: Table of legal structure for OSRW and antidegradation policy
10/13/99
Source/Contact: IDEM
8. **Revised Goals for the Water Quality Advisory Group**
Summary: Revision of WQAG September 8, 1999 task list
10/13/99
Source/Contact: IDEM
9. **Notes from Special Water Quality Advisory Committee Meeting, held October 22, 1999**
Summary: Notes special WQAG meeting deliberating on special designation
Source/Contact: IDEM
10. **Summary of November 10, 1999 WQAG Meeting -11/10/99**
Summary: Draft recommendations plus next steps
Source/Contact: IDEM
11. **Proposed WQAG recommendations for Wet Weather Policy**
Summary: Draft recommendation for WQAG based on report of technical committee. (see WQAG report supplementary documents)
12/3/99
Source/Contact: Bill Beranek
12. **Water Quality Advisory Group Report – December 1999**
Summary: Recommendations for OSRW resolution and Wet Weather status of discussion; Timetable for next WQAG discussions; Summary of Key Documents to Date
12/99
Source Contact: IDEM
13. **Background on Special Designations: Criteria and Procedures**
Summary: Report for January WQAG Meeting – review of current regulations
1/10/00
Source/Contact: IDEM
14. **Grand Cal TMD Presentation**
Summary: PowerPoint presentation given by Bowden Quinn and Tom Anderson to the WQAG in March 2000.
3/03/00
Source/Contact: Bowden Quinn and Tom Anderson

- 15. SEA 431 Governor's Signing Message and Press Release**
Summary: Reviews history of the reason for the WQAG appointment and directions for tasks.
3/17/00
Source/Contact: Governor's Office
- 16. Overall Improvement in the Watershed of an OSRW**
Summary: After SEA 431 is signed into law, the policy about antidegradation for the Outstanding State Resource Waters needs to be rethought through rulemaking. This is one suggestion for an approach.
4/23/00
Source/Contact: Bill Beranek
- 17. EPA Guidance for Data Quality Assessment: Practical Methods for Data Analysis**
Summary: A 219 page technical policy document used by WQAG for its ambient background policy recommendation.
July, 2000
Source/Contact: IDEM
- 18. Summary of WQAG discussion, August 9, 2000 on Antidegradation framework Discussion Issues**
Summary: This sheet lists questions asked to the advisory group from IDEM. It then lists the possible solutions that the group has suggested.
8/9/00
Source/Contact: IDEM
- 19. Proposed Exceptions and Exemptions To Tier 2 Antidegradation Requirements**
Summary: This document is a spreadsheet that covers issues such as actions that do not constitute significant lowering of water quality, exceptions to antidegradation requirements, and activities meeting criteria for important social or economic development.
8/8/00
Source/Contact: Bob Johnston
- 20. WQAG Antidegradation Policy Considerations**
Summary: A draft concerning regulated community perspective for discussion purposes only.
10/11/00
Source/Contact: Indiana Manufacturers Association

- 21. Draft Proposed Exceptions and Exemptions to Tier 2 Antidegradation Requirements**
Summary: Document list 3 actions: 1) Actions that do not constitute a significant lowering of water quality – No Issues; 2) Actions that are exceptions to antidegradation requirements – No issues items 1 through; and 3) Activities meeting the criteria for important social or economic development.
Revised 1/10/01
Source/Contact: IDEM
- 22. Antidegradation – Actions that Do Not Constitute Significant Lowering presented at the 12/12/01 WQAG Meeting**
Summary: A table of the existing rule language from 327 IAC 5-2-11.3 along with an explanation of the WQAG recommended rule revisions from November 8, 2001.
12/12/01
Source/Contact: IDEM
- 23. Antidegradation Review**
Summary : Document C is a flow sheet. It discusses ideas on how to allow new permit limits or increases in ambient concentration according to antidegradation standards.
7/10/00
Source/Contact: Bob Johnston
- 24. Proposed Flow Diagram for Processing Antidegradation for Non-BCC Discharges to High Quality Waters**
Summary: Flowchart that gives an option for processing antidegradation for high quality waters.
Revised 9/13/00
Source/Contact: Neil Parke
- 25. HW Antidegradation**
Summary: This document gives examples of applying antidegradation to different scenarios.
Source/Contact: Neil Parke
- 26. Implementing “Overall Improvement” Antidegradation Requirements in OSRW Watersheds**
Summary: This document starts a discussion on the changes in the OSRW from “maintain and protect without degradation” to an “overall improvement”. This is an outline to help start a discussion.
Revised 9/13/00
Source/Contact: Bob Johnston
- 27. Antidegradation Policy Framework**
Summary: This is a spread sheet that discusses topics such as Water body type, the goals of each water body, the antidegradation standards, and the implementations for each water body type for antidegradation.
Revised 8/22/00
Source/Contact: Bob Johnston

- 28. Antidegradation Policy**
Summary: Spreadsheet that explains the different classifications of water and the antidegradation policy for it.
Source/Contact: Tom Anderson
- 29. IDEM's responses to the antidegradation questions posed at the July 27, 2000 WQAG Meeting**
Summary: This document gives IDEM's answers to questions that were posed to the advisory group. These answers were requested from the group, in order to help them start the group discussion.
Source/Contact: IDEM
- 30. Ron Wukasch's responses to the antidegradation questions posed at July 27, 2000 WQAG Meeting**
Summary: Responses to the questions raised at meeting.
Source/Contact: IDEM
- 31. Bowden Quinn's comments on documents distributed at WQAG meeting on July 27, 2000**
Summary: Responses to the questions raised at meeting.
Source/Contact: IDEM
- 32. Bowden Quinn's comments on September 10, 2001, to Bill Beranek regarding the antidegradation "think piece"**
Summary: Responses to the "think piece" from the August 30, 2001, workgroup meeting.
9/10/01
Source/Contact: Bowden Quinn
- 33. Hugh Brown responses to the Antidegradation question posed at the July 27, 2000 WQAG Meeting**
Summary: Responses to questions raised at meeting.
Source/Contact: IDEM
- 34. Section 132 Appendix E Antidegradation- Review Checklist**
Summary: Antidegradation policy/implementation procedures checklist.
5/16/00
Source/Contact: Tom Anderson
- 35. Antidegradation Policy and Implementation Procedures Save the Dunes Council Comments**
8/22/00
Summary: This document covers the topics of: the purpose of water quality standards, water quality definitions, and Antidegradation.
Source/Contact: Tom Anderson

36. **Revised Antidegradation Policy and Implementation Procedures Save the Dunes Council**
Comments 8/22/00
Source/Contact: Tom Anderson
37. **A Bill Beranek's Email on the Synopsis of Suggested Change to Current WQAG Proposal on Antidegradation Demonstration about Social or Economic Importance to an Area.**
Summary: Beranek's summary to IDEM staff about the WQAG Antideg Social/Econ subgroup meeting that was held on August 22, 2001, at IEI.
08/27/01
Source/Contact: Bill Beranek, Melanie Solmos
38. **Significant Lowering of Water Quality High Quality Waters/ Non-BBCs Overview 9/13/00**
Summary: This document gives an overview of how significant lowering is addressed in the Current Great Lakes System Rules and Proposed Triennial Review Rules.
Source/Contact: IDEM
39. **Federal Guidance on Antidegradation**
Summary: This document opens discussion about the Antidegradation Final Regulation. This includes The Antidegradation Standard, Implementation, De Minimis, and a comment section
9/13/00
Source/Contact: IDEM
40. **Antidegradation Demonstration Guidance**
Summary: Guidance for new NPDES permits outside of the Great Lakes System presented by Steve Roush.
10/11/00
Source/Contact: IDEM
41. **Summary of Thoughts from November 30, 2000 WQAG Meeting by Bill Beranek**
Summary: Thoughts on status of WQAG deliberations
12/18/00
42. **Regulated Community's Exceptions and Exemptions Handout**
Source/Contact: Kari Simonelic
43. **Draft – Comparison of Triennial, 11.7, & 11.3**
11/28/00
Source/Contact: IDEM

44. **Antidegradation Demonstration Guidance for New NPDES Permits Outside of the Great Lakes System**
11/30/00
Source/Contact: Bill Beranek & Melanie Solmos
45. **Draft Economic or Social Importance Antidegradation Demonstration Guidance for NPDES Permits Outside of the Great Lakes System**
Summary: Second version of the draft WQAG Economic/social importance antidegradation demonstration.
2/12/01
Source/Contact: Bill Beranek & Melanie Solmos
46. **Grant Evaluation Criteria – 1000 Points Total**
01/01/00
Source/Contact: Bill Beranek & Melanie Solmos
47. **Bowden Quinn’s thoughts on the Proposed Process for Anti-Degradation Review of High Quality Waters and Discussion on Using a Percentage of Unused Loading Capacity as a De Minimis**
Summary: This document gives Bowden Quinn’s ideas of what the anti-degradation review process should be for high quality waters and discussion on percentage of unused loading capacity.
2/12/01
Source/Contact: Bowden Quinn
48. **Draft Analysis of the Framework for Antidegradation Exception for General Permits**
Summary: This document is a suggested position on antidegradation policy for general permits.
2/28/01
Source/Contact: Bill Beranek
49. **Indiana Water Quality Coalition’s Positions on Antidegradation Exceptions and De Minimis**
Summary: This document was requested at the February 14, 2001 WQAG meeting by Chairman John Fekete for the Indiana Water Quality Coalition to submit its position on antidegradation exceptions and de minimis.
3/01/01
Source/Contact: Patrick Bennett, Kari Simonelic
50. **Memo concerning IDEM’s authority to implement the Clean Water Act.**
Summary: IDEM’s authority to implement the Clean Water Act and to consider economic or social development as part of an antidegradation demonstration.
3/13/01
Source/Contact: IDEM

51. **Bill Beranek's WQAG Policy Discussion March Thinkpieces to the WQAG members & associates.**
Summary: This document is a single file of Bill Beranek's list of documents that was requested at the March 14 WQAG meeting.
03/23/01
Source/Contact: Bill Beranek
52. **Bill Beranek's email on Antidegradation-Social/Econ IDEM Criteria from March 30, 2001.**
Summary: An email to the WQAG members that showed what needed to be discussed at the April 4, 2001 subcommittee meeting with Melanie Solmos.
3/30/01
Source/Contact: Bill Beranek
53. **Regarding DEM Criteria for Social/Econ Determination to the WQAG members and Interested Parties.**
Summary: This document is a tentative proposal to set a procedure and a decision-making criteria for IDEM to use to determine "accommodates important social economic development in the area".
4/4/01
Source/Contact: Melanie Solmos and Bill Beranek
54. **Bill Beranek's Chart F from the Chart A draft from 2/14/01 on the WQAG Concept that was presented on March 8, 2001.**
Summary: A proposal draft flow chart from 2/14/01 is a modification of chart D that was presented to the April 4, 2001, WQAG meeting as chart F.
4/4/01
Source/Contact: Bill Beranek
55. **Bill Beranek's Chart G- A Summary progress chart from the April 13, WQAG meeting about the concept discussion.**
Summary: A draft float chart on the progress of the exceptions and exemptions list.
4/14/01
Source/Contact: Bill Beranek
56. **Framework for State Decision on Antideg Social/Econ Determination from the subcommittee on April 4, 2001 by Melanie Solmos and Bill Beranek.**
Summary: This document was sent to WQAG members and Interested Parties that outlined the concept and procedures gathered from the subcommittee meeting on April 13, 2001.
4/14/01
Source/Contact: Bill Beranek

57. **Bill Beranek's Thoughts on Named Situations that Satisfy One or More of the Antidegradation Demonstration Requirements at the WQAG April 13, 2001 meeting.**
Summary: A 6-page document about WQAG exceptions to the antidegradation process.
04/14/01
Source/Contact: Bill Beranek
58. **A Researchers Perspective on Biocriteria as a Tool for Decision-making presented at the May 9, 2001 WQAG meeting.**
Summary: A PowerPoint presentation that showed the development of a multimetric or IBI-type of assessment index.
5/09/01
Source/Contact: Thomas P. Simon, Ph. D.
59. **Development of the Index of Biotic Integrity for Fish Communities in Indiana at the May 9, 2001 WQAG meeting.**
Summary: A PowerPoint presentation from the Biological Studies Section, Assessment.
5/9/01
Source/Contact: Stacey Sobat, Steven Newhouse, Lee Bridges, & James Stahl
60. **Draft Concept Piece on Biological Integrity as Water Quality Criteria for WQAG Deliberation from September 10, 2001.**
Summary: This document is the results of hearing an informative presentation by EPA staff and by USFWS concerning the state of art of biological integrity in May 9, 2001 and this draft on Biological Integrity framework for WQAG advice was presented at the 10/10/01 WQAG meeting.
10/10/01
Source/Contact: Bill Beranek
61. **Recommendations from the Technical Subcommittee to the WQAG for Determining Ambient Concentrations of Pollutants**
Summary: This document explains how on August 9, 2000, the WQAG formed a technical subcommittee to develop a protocol to determine the ambient concentrations of pollutants in surface water for the purpose of antidegradation implementation.
6/5/01
Source/Contact: IDEM
62. **Macroinvertebrate Community Bioassessment Program at the June 13, 2001, WQAG meeting**
Summary: A PowerPoint presentation from the Biological Studies Section, Assessment Branch.
6/13/01
Source/Contact: Steve Newhouse, Lee Bridges, James Stahl, and Todd Davis

63. **Types and Objectives of Sediment Quality Assessments were presented at the June 13, 2001 WQAG meeting**
Summary: A PowerPoint presentation given by D. Scott Ireland, USEPA/OW/OST, Washington, DC.
6/13/01
Source/Contact: Scott Ireland
64. **Indiana Water Quality Coalition Position on Sediment Criteria submitted to October 10, 2001 WQAG meeting**
Summary: This document is the Indiana Water Quality Coalition's final position concerning IDEM's the proposed sediment criteria.
10/10/01
Source/Contact: Patrick Bennett
65. **Draft Concept Piece on Sediment Quality Standards for Water Quality Advisory Group from September 11, 2001.**
Summary: This document is a draft and was presented at the WQAG October 10, 2001, meeting.
10/10/01
Source/Contact: Bill Beranek
66. **Draft Position Paper – FOR DISCUSSION PURPOSES ONLY**
Summary: This document "Necessary to Discharge" Antideg Policy Question March 23, 2001, addressed the federal terminology for "necessary" as the capacity of a discharge proposing to significantly lower water quality and it provided two possible solutions.
10/10/01
Source/Contact: Bill Beranek
67. **Draft Framework for the "Necessary to Lower Water Quality When Discharging Due to Technical Considerations" Antideg Policy.**
Summary: This document poses the decision about technology after "necessary to lower water quality during discharge" is affirmative and the important social or economic development in the area has been decided.
11/14/01
Source/Contact: Bill Beranek
68. **Draft Framework for the "Necessary to Lower Water Quality When Discharging Due to Technical Considerations" Antideg Policy.**
Summary: This document was presented to the 12/12/01 WQAG meeting for a discussion concerning the "necessary to lower water quality during discharge" decision in the WQAG-proposed scheme occurs.
12/12/01
Source/Contact: Bill Beranek

69. **A think piece towards discussion about an Indiana policy on what amount or character of an increase in the load of a permitted discharge will be enough to require an antidegradation demonstration – Significant Lower/de minimus.**
Summary: This 15-page document is about portions of Indiana Waters Outside the Great Lakes Basin for August 30, 2001, and it was submitted to WQAG meeting on October 10, 2001.
10/8/01
Source/Contact: Bill Beranek
70. **Bowden Quinn’s revisions to Beranek’s think piece towards discussion about an Indiana policy on what amount or character of an increase in the load of a permitted discharge will be enough to require an antidegradation demonstration: This is for portions of Indiana Waters Outside the Great Lakes Basin.**
Summary: Bowden Quinn’s suggested changes to Bill Beranek’s significant lowering/de minimis.
09/17/01
Source/Contact: Bowden Quinn
71. **A think piece towards discussion about an Indiana policy on what amount or character of an increase in the load of a permitted discharge will be enough to require an antidegradation demonstration: This is for portions of Indiana Waters Outside the Great Lakes Basin but ideas may have implications for certain policies inside the Basin.**
Summary: Document is for discussion purposes only and it is a revision draft of the October 10, 2001 document which was presented at the November 14, 2001 meeting.
11/02/01
Source/Contact: Bill Beranek
72. **WQAG Issues & Final Recommendations Status 10/10/01.**
Summary: This document provided the mission and background status for the 10/10/01 WQAG meeting about the developing water quality policies.
10/10/01
Source/Contact: IDEM
73. **WQAG Issues & Final Recommendations 12/12/01.**
Summary: This document is a draft that was presented to the 12/12/01 WQAG meeting and it outlined four key policy issues along with IDEM’s final recommendations.
12/12/01
Source/Contact: IDEM

74. **Bill Beranek's email to WQAG Members and Interested Parties on 12/10/01 Concerning WQAG Summary Final Report.**
Summary: This is an explanatory email that was sent to WQAG Members and Interested Parties from by Bill Beranek was presented to the 12/12/01 WQAG meeting concerned the final WQAG report as a pre-summary report for three documents.
12/10/01
Source/Contact: Bill Beranek
75. **Bill Beranek's Seven Page – Draft WQAG Findings.**
Summary: This document that was presented to the 12/12/01 WQAG meeting outlined WQAG's supportive role in helping IDEM shape sound policies on four key water quality issues.
10/10/01
Source/Contact: Bill Beranek
76. **Bill Beranek's Four Page Draft Summary of WQAG Findings.**
Summary: This document that was presented to the 12/12/01 WQAG meeting summarized WQAG's findings and it's perspective on four key policy issues.
12/10/01
Source/Contact: Bill Beranek
77. **Indiana Water Quality Coalition Positions (IWQCP) on Antidegradation and Biological and Sediment Criteria Executive Summary that was presented at the 2/13/02 WQAG meeting.**
Summary: This report consist of multi-documents stating the coalition's position on the following issues: background concentration, antidegradation exceptions, insignificant lowerings/de minimis, technical necessity of lowering of water quality, demonstration of important or social development, biological criteria, and sediment criteria.
2/13/02
Source/Contact: Patrick Bennett, Kari Evans
78. **Presentation of WQAG Findings to IDEM Commissioner**
Summary: Outline of history, rational and findings of WQAG
3/13/02
Source/Contact: Bill Beranek